Directions: Identify the choice that best completes the statement or answers the question.

_____ 1. Which of the following numbers occurs in the sequence –12, –8, –4, 0, 4, . . .?

   A 6   C 24
   B -3   D 15

_____ 2. The common difference in the arithmetic sequence 2, –6, –14, –22, . . . is

   A -8   C -16
   B -3 D 8

_____ 3. Which of the given formulas for the general term of the sequence –9, –1, 7, 15, 23, . . . is
           correct?

   A $t_n = -8n - 17$ C $t_n = 8n - 1$
   B $t_n = 8n - 17$ D $t_n = -8n - 1$

_____ 4. What is the 18th term of the sequence –22, –21.2, –20.4, –19.6, –18.8, …?

   A –6.8   C -8.4
   B 0.8   D -35.6

_____ 5. The sum of the series (–5) + (–7) + (–9) + $\cdots$ + (–19) is

   A -96   C -192
   B -304   D 26

_____ 6. The sum of an arithmetic series where t_1 = -2, t_3 = 7, and n = 15 is

   A -502.5   C 476.25
   B 442.5   D 885
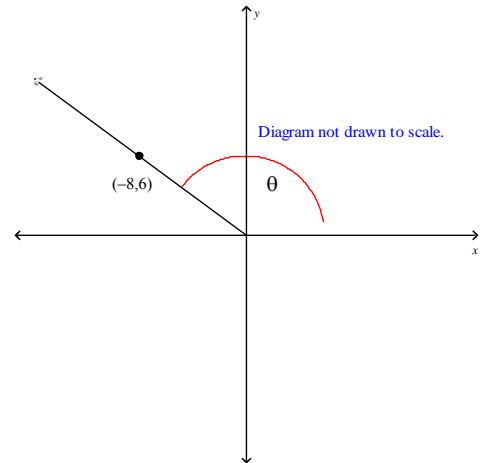
_____ 7. The sum of an arithmetic series where $t_1 = \frac{1}{2}$, $d = 3$, and n = 19 is

   A 551   C $\frac{1045}{2}$

   B $\frac{165}{2}$ D 1045

_____ **8.** For the arithmetic series $(107) + (130) + (153) + \cdots + (981)$, the values of t_1, d, and n are

    A $t_1 = 107$, $d = 23$, $n = 39$ **C** $t_1 = -107$, $d = 23$, $n = 38$

    B $t_1 = 107$, $d = -23$, $n = 39$ **D** $t_1 = -107$, $d = -23$, $n = 38$

_____ **9.** On the first day of the month, Michael places 5¢ in a jar. The next day, he places 7¢ in the jar. The third day, he places 9¢ in the jar, and so on for 24 days. What amount will be in the jar at the end of this period of time?

    A $6.72   **C** $6.96

    B $6.36   **D** $6.12

_____ **10.** The common ratio for the geometric sequence $8, 1, 0.125, 0.015625, \ldots$ is

    A $\dfrac{1}{8}$ **C** 8

    B -8 **D** $-\dfrac{1}{8}$

_____ **11.** In the formula for the general term of a geometric sequence $t_n = -10\left(\dfrac{4}{5}\right)^{n-1}$, the common ratio is

    A $\dfrac{5}{4}$ **C** 4

    B 5 **D** $\dfrac{4}{5}$

_____ **12.** The eighth term in the sequence $3\ 515\ 625, 703\ 125, 140\ 625, 28\ 125, \ldots$ is

    A 9 **C** 45

    B $\dfrac{1}{9}$ **D** 5

_____ **13.** How many terms are in the sequence $2, 8, 32, 128, 512, \ldots, 2\ 097\ 152$?

    A 9 **C** 10

    B 12 **D** 11

_____ **14.** The sum of a geometric series where $t_1 = \dfrac{1}{3}$, $r = 2$, and $n = 3$ is approximately

    A 2.3 **C** 2.7

    B 1.3 **D** 1.2

_____15. The sum of the geometric series 14 + 70 + 350 + ⋯ + 43 750 is

A 8747 C 54 688
B 10 938 D 54 684

_____16. The 6th term of the geometric series 256 + 128 + 64 + ⋯ is

A $\frac{64}{9}$ C 8

B 4 D 2

_____17. What is the value of S_9 for the series 8 – 24 + 72 – 216 + ⋯ ?

A 39 366 C 52 491
B –13 122 D 39 368

_____18. Determine the sum of the infinite geometric series $11 + \frac{11}{3} + \frac{11}{9} + \frac{11}{27} + \ldots$

A 33 C $\frac{33}{2}$

B $\frac{33}{4}$ D $\frac{440}{27}$

_____19. Determine the sum of the infinite geometric series with $t_1 = 2$ and $r = \frac{1}{5}$.

A $\frac{1}{3}$ C $-\frac{1}{2}$

B $\frac{5}{3}$ D $\frac{5}{2}$

_____20. What is the reference angle for 200° in standard position?

A 100° C 20°
B 70° D 110°

_____21. The point (40, –9) is on the terminal arm of ∠A. Which is the set of exact primary trigonometric ratios for the angle?

A $\sin A = -\frac{41}{9}$, $\cos A = \frac{41}{40}$, $\tan A = -\frac{9}{40}$

B $\sin A = \frac{40}{41}$, $\cos A = -\frac{9}{41}$, $\tan A = -\frac{40}{9}$

C $\sin A = -\frac{40}{41}$, $\cos A = \frac{9}{41}$, $\tan A = -\frac{9}{40}$

D $\sin A = -\frac{9}{41}$, $\cos A = \frac{40}{41}$, $\tan A = -\frac{9}{40}$

_____22. The coordinates of a point P on the terminal arm of an angle are shown. What are the exact trigonometric ratios for $\sin\theta$, $\cos\theta$, and $\tan\theta$?

A $\sin A = -\dfrac{4}{5}$, $\cos A = \dfrac{3}{5}$, $\tan A = -\dfrac{4}{3}$

B $\sin A = \dfrac{5}{3}$, $\cos A = -\dfrac{5}{4}$, $\tan A = -\dfrac{3}{4}$

C $\sin A = \dfrac{3}{5}$, $\cos A = -\dfrac{4}{5}$, $\tan A = -\dfrac{3}{4}$

D $\sin A = \dfrac{4}{5}$, $\cos A = -\dfrac{3}{5}$, $\tan A = -\dfrac{3}{4}$

(–8,6)   θ

Diagram not drawn to scale.

_____23. Determine the length of x, to the nearest tenth of a centimetre.

A 26.6   **C** 11.2

B 36.5   **D** 17.1

40°

x

70°

25 cm
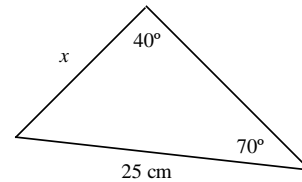
Diagram not drawn to scale.

_____24. If $\angle B = 58.8°$, $c = 10.3$ cm, and $b = 10.5$ cm, and $\triangle ABC$ is acute, what is the measure of $\angle C$, to the nearest tenth of a degree?

A 57°   **C** 30.5°

B 123.0°   **D** 149.5°

A

c   b

B   a   C
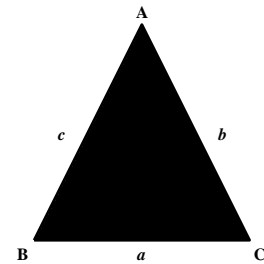
Diagram not drawn to scale.

_____25. Determine the measure of x, to the nearest tenth of a degree.

A 25.6°   **C** 136.3°

B 18.1°   **D** 71.9°

40 cm

x

18 cm   25 cm
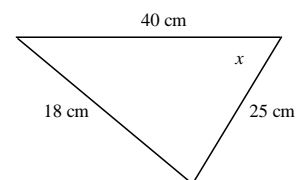
Diagram not drawn to scale.

_____**26.** What is the length of x, to the nearest tenth of a metre?

A 27.7 m   **C** 26.1 m

B 21.8 m   **D** 37.6 m

33 m   18 m

52°

Diagram not drawn to scale.
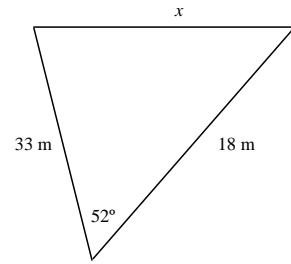
_____**27.** If $\angle Q = 31°$, r = 20 cm, and p = 23 cm, what is the length of q, to the nearest centimetre?

P q R

r p

Q

A 21 cm   **C** 12 cm

B 30 cm   **D** 11 cm
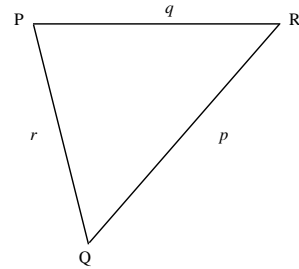
Diagram not drawn to scale.

_____**28.** Solve the following triangle, rounding side lengths to the nearest tenth of a unit and angle measures to the nearest degree.

A

c b

B a C

A $\angle B = 22°$, $\angle C = 6°$, $c = 5.0$

B $\angle B = 158°$, $\angle C = 84°$, $c = 5.0$

C $\angle B = 68°$, $\angle C = 174°$, $c = 28.7$

D $\angle B = 35°$, $\angle C = 7°$, $c = 28.2$
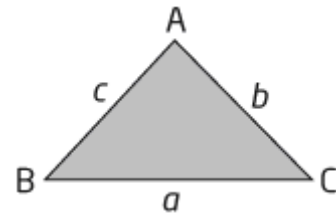
$\angle A = 152°$, $b = 19$, $a = 23.5$

_____**29.** What is the axis of symmetry of $f(x) = 2(x + 6)^2 - 3$?

A $x = 2$ **C** $x = -6$

B $x = -3$ **D** $x = 6$

_____**30.** What is the quadratic function in vertex form for the parabola shown below?

A $f(x) = -8(x - 2)^2 + 1$ **C** $f(x) = 8(x + 1)^2 + 1$

B $f(x) = -8(x - 1)^2 + 2$ **D** $f(x) = 8(x - 1)^2 - 2$
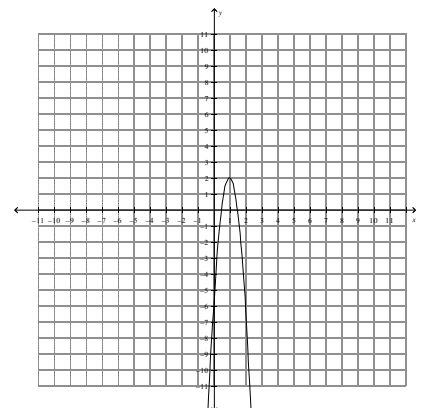
_____**31.** What is the vertex of $y = 7(x+5)^2 + 4$?

A (5, 4)   **C** (-5, 4)

B (-4, 5)   **D** (7, -4)

_____**32.** Which graph represents the quadratic function $y = \frac{5}{7}(x-4)^2 - 7$?

A

C

B

D
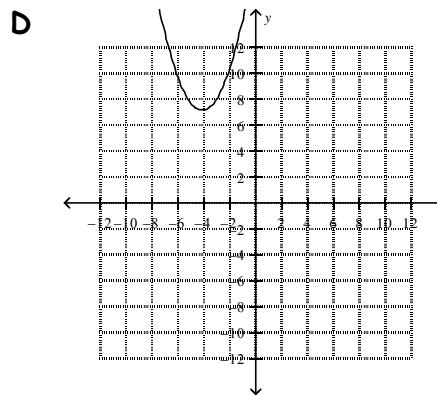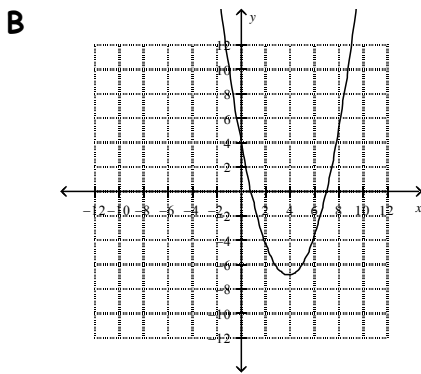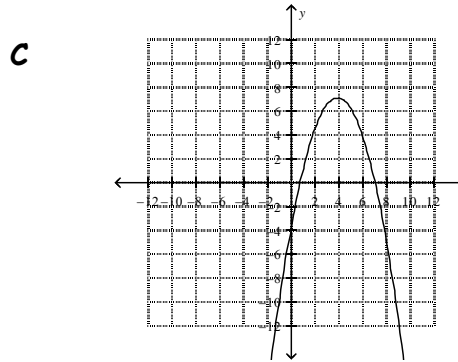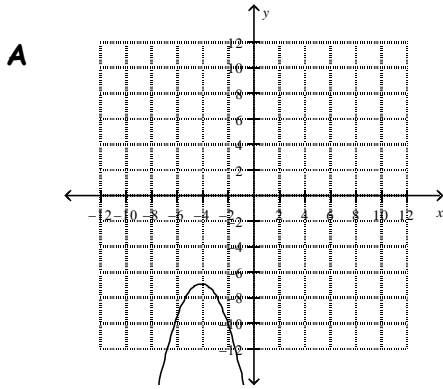
_____**33.** What are the domain and range of $y = 7(x-1)^2 - 9$?

A Domain: $\{x|x \le -1, x \in R\}$
    Range: $\{y|y \in R\}$

C Domain: $\{x|x \ge 7,\ x \in R\}$
    Range: $\{y|y \in R\}$

B Domain: $\{x|x \in R\}$
    Range: $\{y|y \ge -9, y \in R\}$

D Domain: $\{x|x \in R\}$
    Range: $\{y|y \le -1, y \in R\}$

_____**34.** The vertex of a parabola is located at $(-5, 6)$. If the parabola has a y-intercept of 231, which quadratic function represents the parabola?

A $f(x) = 9(x-5)^2 + 6$ **C** $f(x) = -9(x+5)^2 + 6$

B $f(x) = 9(x+5)^2 + 6$ **D** $f(x) = 9(x-5)^2 - 6$

_____35. What information can be determined from the quadratic function $f(x) = \frac{2}{3}(x+2)^2 - 9$?

  A the vertex is at (–2, –9) and the graph opens upward
  B the vertex is at (–9, –2) and the graph opens downward
  C the vertex is at (–2, –9) and the graph opens downward
  D the vertex is at (–9, –2) and the graph opens upward

_____36. Identify the characteristics of this graph.

  A vertex: (–2, –5)
     axis of symmetry: $x = -2$
     y-intercept: 10.5
     x-intercepts: –3 and –7
     opens downward

  C vertex: (–2, –5)
     axis of symmetry: $x = -2$
     y-intercept: 10.5
     x-intercepts: –3 and –7
     opens upward

  B vertex: (–5, –2)
     axis of symmetry: $x = -5$
     y-intercept: 10.5
     x-intercepts: –3 and –7
     opens upward

  D vertex: (–5, –2)
     axis of symmetry: $x = -2$
     y-intercept: 10.5
     x-intercepts: 3 and 7
     opens downward

_____37. What are the coordinates of the vertex of the quadratic function $y = 4x^2 + 8x - 2$?

  A (–6, –1)   C (–1, –6)
  B (8, –2)   D (8, –6)

_____38. What is the equation of the quadratic function $y = x^2 + 24x + 29$ in vertex form?

  A $y = (x+12)^2 - 173$ C $y = (x-12)^2 - 173$
  B $y = (x-12)^2 - 115$ D $y = (x+12)^2 - 115$

_____**39.** State whether the function $y = 4x^2 - 36x - 43$ has a maximum or minimum value and identify the coordinates of the vertex.

A maximum at $(4.5, -124)$ **C** minimum at $(-124, 4.5)$

B maximum at $(-124, 4.5)$ **D** minimum at $(4.5, -124)$

_____**40.** How many x-intercepts does the graph of the quadratic function $f(x) = -2.3x^2 - 6.9x - 4.6$ have?

A unknown   **C** 1

B 2   **D** 0
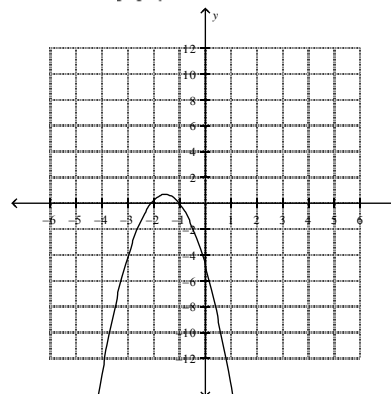
_____**41.** What are the x-intercepts of the quadratic function graphed here?

A 2 and –4   **C** 11.2

B –2 and 4   **D** 12.6
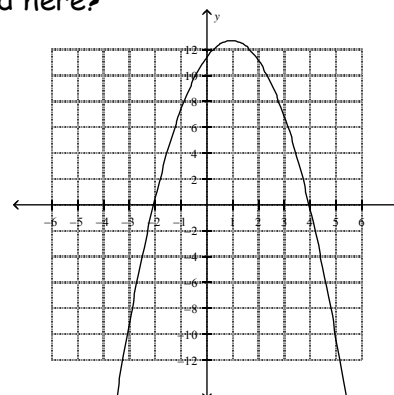
_____**42.** What are the x-intercepts of the quadratic function graphed here?

A 4.6   **C** –2.2

B there are none   **D** 9.0
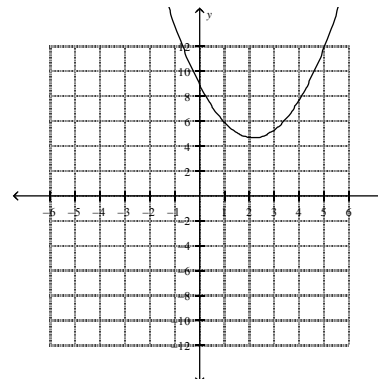
_____43. What are the roots of the quadratic function $y = 0.5x^2 + 3.5x + 6$?

A -0.125

B 4 and 3

C -4 and -3

D 6

_____44. Factor $x^2 - 20x + 75$ completely.

A $(x-5)(x+15)$

B $(x+5)(x+15)$

C $(x+5)(x-15)$

D $(x-5)(x-15)$

_____45. Factor $-4x^2 + 68x - 120$ completely.

A $-4(x-2)(x-15)$

B $-4(x+2)(x+15)$

C $-4(x+2)(x-15)$

D $-4(x-2)(x+15)$

_____46. Solve $-8x^2 + 120x + 432 = 0$.

A $x = 18$ and $x = -3$

B $x = -18$ and $x = 3$

C $x = \frac{9}{4}$ and $x = -\frac{3}{8}$

D $x = -144$ and $x = 24$

_____47. Determine the roots of the quadratic equation $-5x^2 + 55x = 50$.

A $x = -10$ and $x = -1$

B $x = -50$ and $x = -5$

C $x = 10$ and $x = 1$

D $x = 2$ and $x = \frac{1}{5}$

_____48. Solve $(x+4)(x-9) = 0$.

A $x = 4$ and $x = -9$

B $x = 4$ and $x = 9$

C $x = -4$ and $x = 9$

D $x = -4$ and $x = -9$

_____49. A rectangle has dimensions $x + 10$ and $5x - 4$, where x is in centimetres. If the area of the rectangle is 72 cm^2, what is the value of x, to the nearest tenth of a centimetre?

A $x = 2.0$

B $x = -4.6$

C $x = 11.2$

D $x = -11.2$

_____50. The vertex form of $4x^2 + 16x + 11 = 0$ is

A $4(x+5)^2 - 2 = 0$

B $4(x-2)^2 + 5 = 0$

C $4(x+2)^2 - 5 = 0$

D $4(x-2)^2 - 5 = 0$

_____51. Which is the vertex form of $2x^2 - 12x - 10 = 0$? Round coefficients to the nearest hundredth if necessary.

A $2(x+3)^2 - 28 = 0$ C $2(x+3)^2 + 28 = 0$

B $2(x-28)^2 - 3 = 0$ D $2(x-3)^2 - 28 = 0$

_____52. Solve $(x+1)^2 = 43$.

A $1 + \sqrt{43}$ and $1\square\square\sqrt{43}$ C $2\sqrt{11}$

B $-1 + \sqrt{43}$ and $-1\square\square\sqrt{43}$ D $\sqrt{42}$

_____53. A rectangle with an area of $2504\ \text{cm}^2$ is x centimetres wide and $(x+8)$ centimetres long. To the nearest tenth of a centimetre, the width and length are

A 50.0 cm and 50.0 cm   C 46.2 cm and 54.2 cm

B -46.2 cm and -54.2 cm   D -14.0 cm and 114.0 cm

_____54. When Alex rides his dirt bike off a ramp, his path can be modelled by $h(d) = -3.9d^2 + 13.1d + 8.7$, where d is the horizontal distance from the ramp and h is the height, both in metres. How far away from the ramp does he land, to the nearest tenth of a metre?

A 2.0 m   C 7.9 m

B 0.6 m   D 3.9 m

_____55. For a science experiment, a projectile is launched. Its path is given by $h(d) = -4.0d^2 + 61.3d + 20.9$, where h is the height of the projectile above the ground and d is the horizontal distance of the projectile from the launch pad, both in metres. How far away from the launch pad is the projectile when it begins to fall, to the nearest tenth of a metre?

A 255.8 m   C 0.3 m

B 7.7 m   D 15.7 m

_____56. Find a simplified expression for the perimeter of this shape.

Not to scale.

$4\sqrt{5} - 8$

$7\sqrt{5} - 2\sqrt{6}$
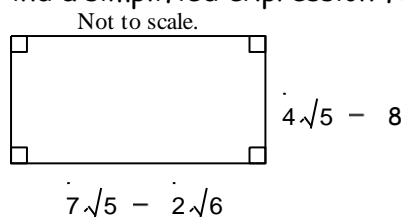
A $44\sqrt{5} - 8\sqrt{6} - 32$ C $12\sqrt{2} + 4\sqrt{3} + 4$

B $22\sqrt{5} - 4\sqrt{6} - 16$ D $4\sqrt{6} + \sqrt{3} - 8 - \sqrt{2}$

_____**57.** Simplify $3\sqrt{175} + 6\sqrt{63}$.

    A $9 + \sqrt{238}$ **C** $9 + 2\sqrt{2}$

    B $33\sqrt{7}$ **D** 114

_____**58.** Simplify $6\sqrt{80} - 2\sqrt{20}$.

    A $4 + \sqrt{2}$ **C** -36

    B $4 + 2\sqrt{15}$ **D** $20\sqrt{5}$

_____**59.** Express $-7\sqrt{6}\left(-6\sqrt{5} - 2\sqrt{6}\right)$ in simplest form.

    A $14\sqrt{6} + 42\sqrt{30}$ **C** $42\sqrt{30} + 84$

    B 252 **D** $1260 + 14\sqrt{6}$

_____**60.** Find a simplified expression for the area of this shape.

Not to scale.

$3\sqrt{7} - 4\sqrt{2}$

$3\sqrt{7} + 4\sqrt{2}$
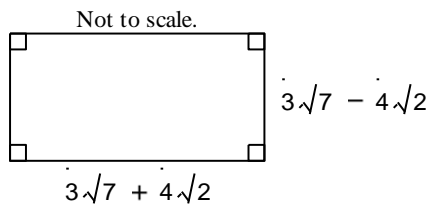
    A $9\sqrt{7} + 16\sqrt{2}$ **C** 95

    B $9\sqrt{7} - 16\sqrt{2}$ **D** 31

_____**61.** Express $\left(\sqrt{19} - \sqrt{7}\right)\left(\sqrt{19} + \sqrt{7}\right)$ in simplest form.

    A $2\sqrt{19} - 19\sqrt{7}$ **C** 12

    B $2\sqrt{3}$ **D** $2\sqrt{19} - 2\sqrt{7}$

_____**62.** Solve $\sqrt{7x} = 5$.

    A $x = \dfrac{25}{49}$ **C** $x = \dfrac{5}{7}$

    B $x = \dfrac{25}{7}$ **D** $x = \dfrac{5}{49}$

_____**63.** Solve $\sqrt{6x} + 7 = \sqrt{7x + 7} + 6$.

    A $x = -6$ **C** $x = 6$

    B $x = 24$ **D** $x = 12$

_____**64.** Solve $\sqrt{x+3} = \sqrt{2x+8}$.

A $x = 25$

C $x = \dfrac{1}{25}$

B $x = -5$

D $x = -\dfrac{1}{5}$

_____**65.** The non-permissible value(s) for the rational expressions $\dfrac{12}{x^2-4}$ is (are)

A $x \neq 2, x \neq 2$

C $x \neq 2$

B $x \neq 2\sqrt{3}$

D $x \neq 4$

_____**66.** The non-permissible value(s) for the expression $\dfrac{-9x+8}{-9x^2-55x+56}$ is (are)

A $x \neq -\dfrac{8}{9}$

C $x \neq \dfrac{8}{9}$ and $x \neq -7$

B $x \neq 8$

D there are no restrictions

_____**67.** Simplify $\dfrac{24x^2+101x+105}{9x^2+42x+49}$.

A $\dfrac{8x+15}{-3x-7}$

C $\dfrac{-8x-15}{-3x-7}$

B $\dfrac{8x+15}{3x+7}$

D $\dfrac{8x-15}{-3x+7}$

_____**68.** What is the simplified version of the rational expression $\dfrac{-3x+12}{32-8x}$?

A $\dfrac{3}{8}(x-4)$

C $\dfrac{3}{8}$

B $x-4$

D $-\dfrac{3}{8}$

_____**69.** Express the product $\dfrac{x^2+6x}{2x^2+15x+27} \times \dfrac{x+3}{x^2-36}$ in simplest form.

A $\dfrac{(x^2+6x)(x+3)}{(2x^2+15x+27)(x^2-36)}$

C $\dfrac{x}{(2x-36)(x+6)}$

B $\dfrac{x}{(2x+9)(x-6)}$

D $-\dfrac{1}{2x+9}$

_____**70.** Express the quotient $\dfrac{x^2-5x-24}{x^2-11x+24} \div \dfrac{2x^2+7x+3}{x^2+x-12}$ in simplest form.

A $\dfrac{2x+1}{x+4}$

C $\dfrac{(x+3)(2x+1)}{(x-3)(x+4)}$

B $\dfrac{x+4}{2x+1}$

D $\dfrac{(x-3)(x+4)}{(x+3)(2x+1)}$

_____**71.** When fully simplified, $\dfrac{13}{x+5} - \dfrac{12}{x+5}$ is equal to

A $\dfrac{13}{12}(x+5)$ **C** $\dfrac{1}{5}(x+5)$

B $\dfrac{25}{x+5}$ **D** $\dfrac{1}{x+5}$

_____**72.** Simplify the rational expression $\dfrac{5x+3}{x^2} - \dfrac{8x^2+9}{x^3}$.

A $\dfrac{-8x^2+5x-6}{x^3}$ **C** $\dfrac{-3x^2+3x-9}{x^3}$

B $\dfrac{-8x^2+5x-6}{x^2}$ **D** $\dfrac{-3x^2+3x-9}{x^2}$

_____**73.** When fully simplified, ignoring restrictions on the variable, $\dfrac{x+8}{x^2+9x+20} + \dfrac{x+5}{x^2+7x+12}$ is equal to

A $\dfrac{2x+13}{2x^2+16x+32}$ **C** $\dfrac{2x^2-21x-49}{(x+5)(x+4)(x+3)}$

B $\dfrac{(x+8)(x+5)}{(x^2+9x+20)(x^2+7x+12)}$ **D** $\dfrac{2x^2+21x+49}{(x+5)(x+4)(x+3)}$

_____**74.** Solve the rational equation $\dfrac{x}{6} - \dfrac{5}{x} = 0$. Identify all non-permissible values.

A $x = \pm 6\sqrt{5}$, $x \neq 6$ **C** $x = \pm\sqrt{30}$, $x \neq 0$

B $x = 30$, $x \neq 6$ **D** $x = \dfrac{5}{6}$, $x \neq 0$

_____**75.** Solve the rational equation $\dfrac{x}{x+1} = \dfrac{4-x}{x^2-3x-4} + \dfrac{6}{x-4}$.

A $x = 10$ **C** $x = -10$

B $x = 4$ and -1 **D** $x = -10$ and 1

_____**76.** What is the exact solution to the equation $\dfrac{9x+2}{x-9} = \dfrac{2}{5}$

A $\dfrac{28}{43}$ **C** $\dfrac{9}{5}$

B $\dfrac{2}{9}$ **D** $\dfrac{43}{28}$

_____**77.** The graph of $y = |-2x + 2|$ is

A

C

B

D
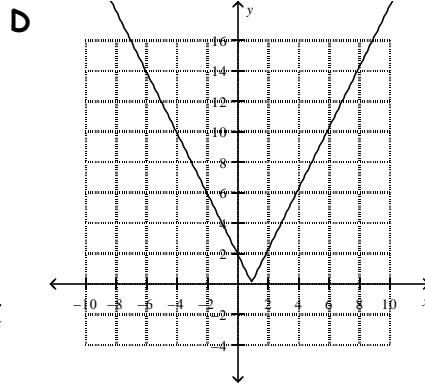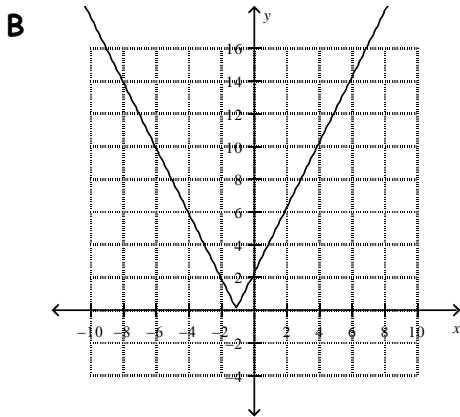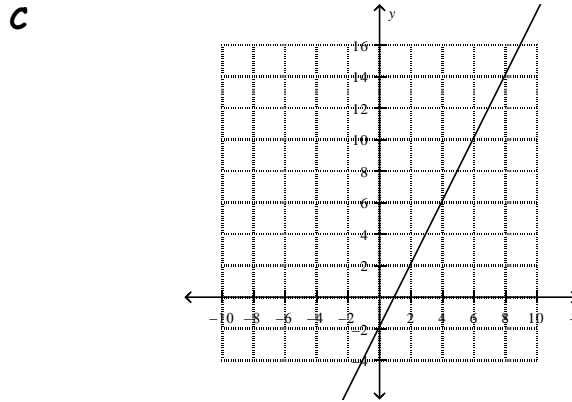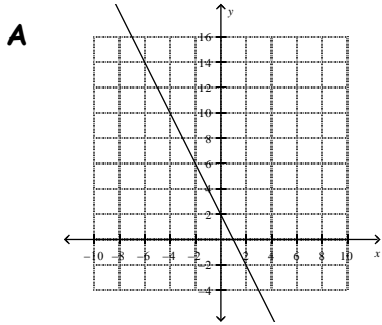
_____**78.** Given the graph of $y = f(x)$, which is the graph of $y = |f(x)|$?

A

C

B

D
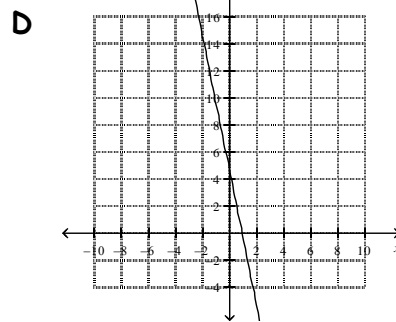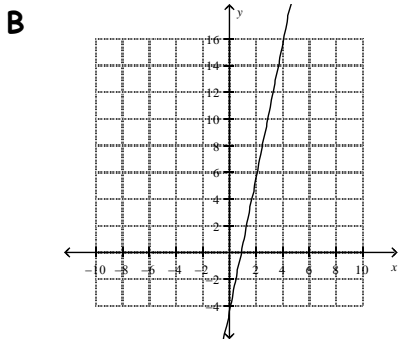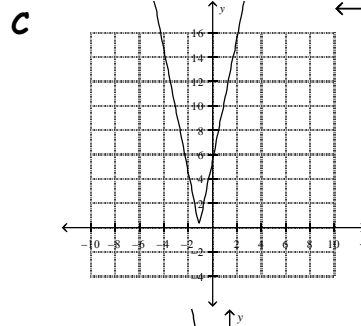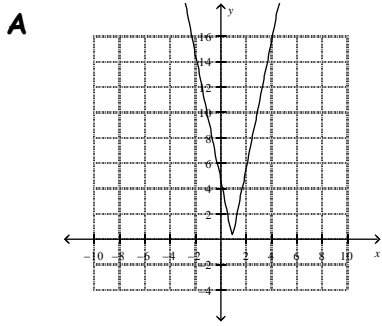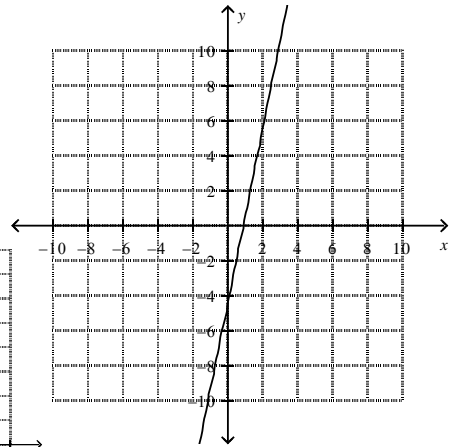
_____79. What are the domain and range of $y = |-3x + 2|$?

A Domain: $\left\{x \mid x \in R\right\}$

     Range: $\left\{y \mid y \in R\right\}$

C Domain: $\left\{y \mid y \in R\right\}$

     Range: $\left\{x \mid x \geq 0, x \in R\right\}$

B Domain: $\left\{x \mid x \in R\right\}$

     Range: $\left\{y \mid y \geq 0, y \in R\right\}$

D Domain: $\left\{x \mid x \leq 0, x \in R\right\}$

     Range: $\left\{y \mid y \in R\right\}$

_____80. What are the domain and range of $y = \left|6x^2 + 3x - 3\right|$?

A Domain: $\left\{x \mid x \in R\right\}$

     Range: $\left\{y \mid y \in R\right\}$

C Domain: $\left\{x \mid x \leq 0, x \in R\right\}$

     Range: $\left\{y \mid y \in R\right\}$

B Domain: $\left\{y \mid y \in R\right\}$

     Range: $\left\{x \mid x \geq 0, x \in R\right\}$

D Domain: $\left\{x \mid x \in R\right\}$

     Range: $\left\{y \mid y \geq 0, y \in R\right\}$

_____81. The graph of $y = \left|-3x^2 + 2x + 2\right|$ is

A
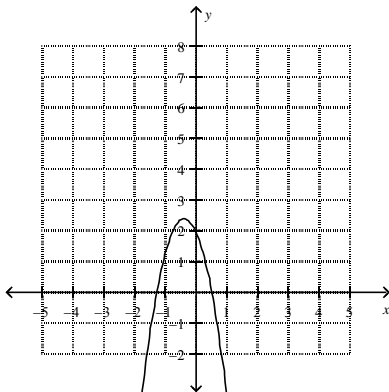
C
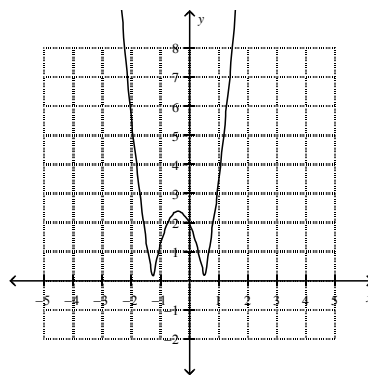
B
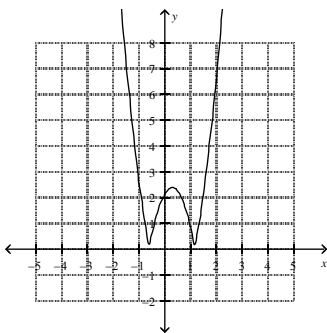
D
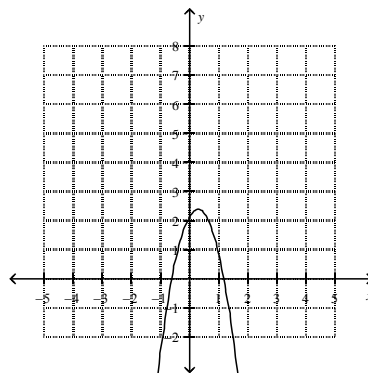
____82. The graph of $y = \left|(x+2)^2 - 2\right|$ is

A
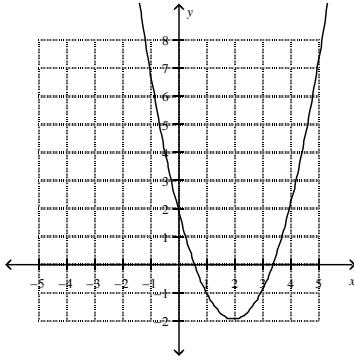
C
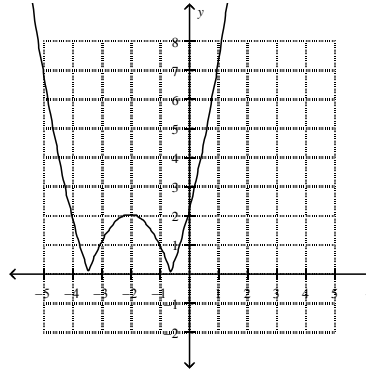
B
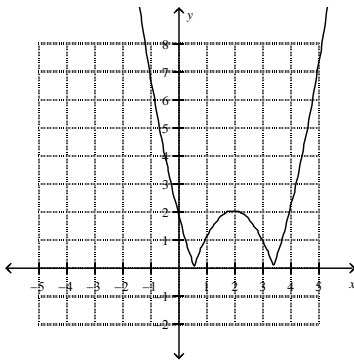
D
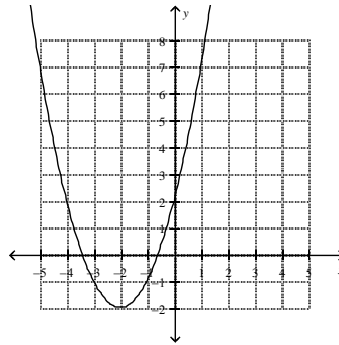
____83. The graph of $y = \left|\frac{1}{2}x^2 - 3x + 2\right|$ is

A
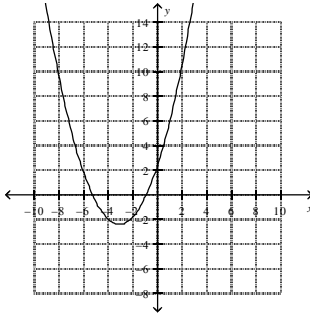
C
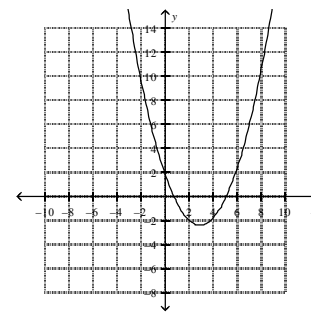
B
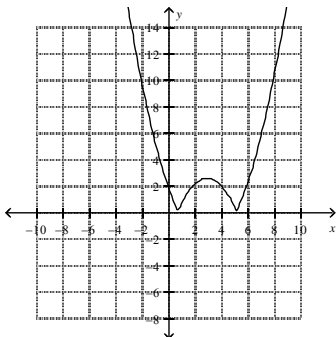
D
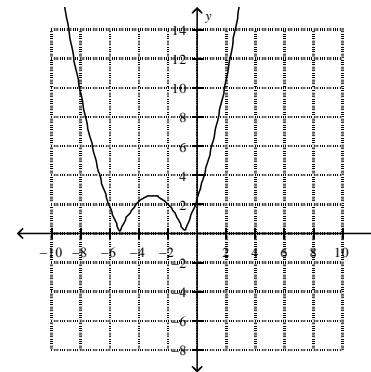
_____**84.** Given the graph of $y = f(x)$, which is the graph of $y = |f(x)|$?
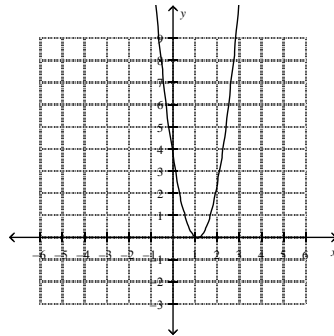
A
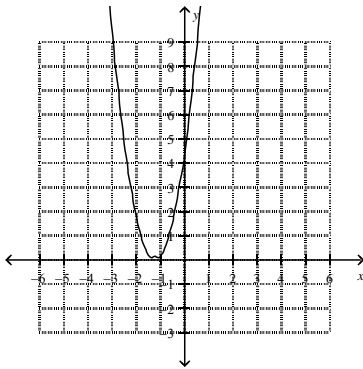
C

B

D

_____**85.** Solve $|x + 4| = 7$.

A $x = 3$
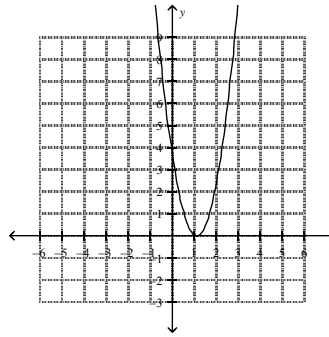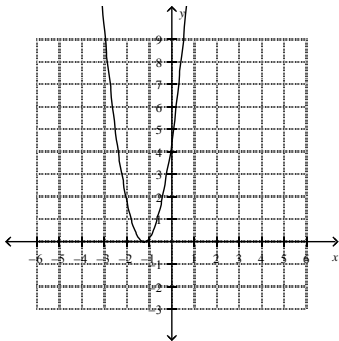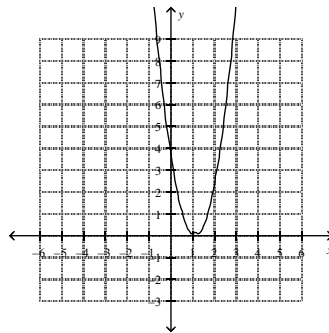
B $x = 3$ or $x = -11$

C $x = 11$

D $x = -3$ or $x = 11$

_____**86.** Determine the solution to $|6x + 9| + 2 = 8$.

A $x = -\dfrac{1}{2}$ or $x = -\dfrac{5}{2}$

B no solution

C $x = \dfrac{1}{2}$ or $x = \dfrac{5}{2}$

D $x = \dfrac{5}{2}$

_____**87.** Determine the solution to $|2x + 8| + 6 = -3$

A $x = -\dfrac{17}{2}$ or $x = \dfrac{1}{2}$ **C** no solution

B $x = \dfrac{17}{2}$ or $x = -\dfrac{1}{2}$ **D** $x = -\dfrac{1}{2}$

_____**88.** What is the solution to $|4x + 8| = -8x + 3?$

A $x = -\dfrac{5}{12}$ or $x = \dfrac{11}{4}$ **C** $x = \dfrac{5}{12}$

B $x = \dfrac{5}{12}$ or $x = \dfrac{11}{4}$ **D** $x = -\dfrac{5}{12}$

_____**89.** Solve $\left|x^2 - 7\right| = 3$.

A $x = \sqrt{10}$ **C** $x = \pm\sqrt{10},\ x = \pm 2$

B $x = \pm 2$ **D** $x = \sqrt{10},\ x = 2$

_____**90.** Solve $\left|x^2 + 3x + 3\right| = 3x + 7$.

A $x = -2$ and -2 **C** $x = 2$ and -2

B $x = -2$ and -4 **D** $x = 2$ and -2

_____**91.** Which graph represents the reciprocal of the linear function $y = 4x - 2?$

A

C

B

D
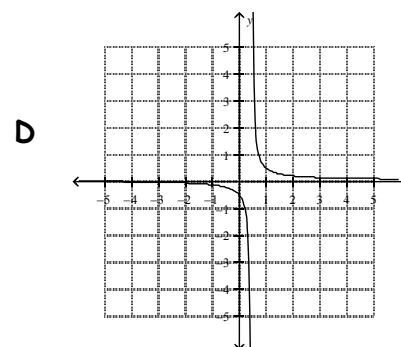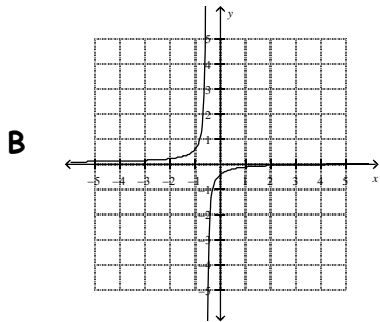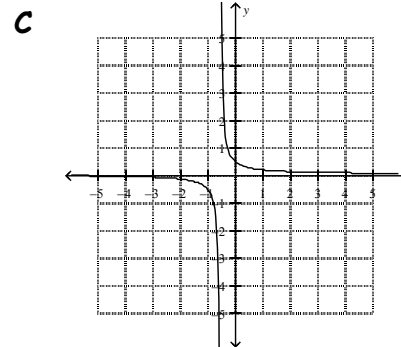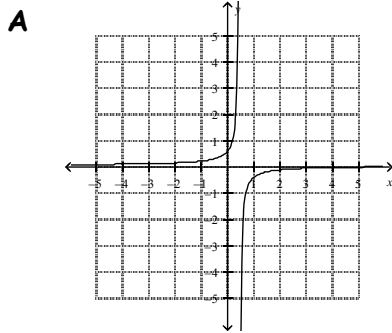
_____92. Which graph represents the reciprocal of $y = (5/2)x + 2$?

A
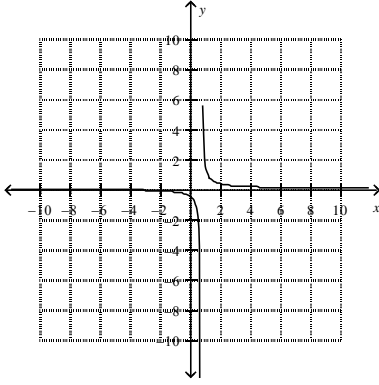
C
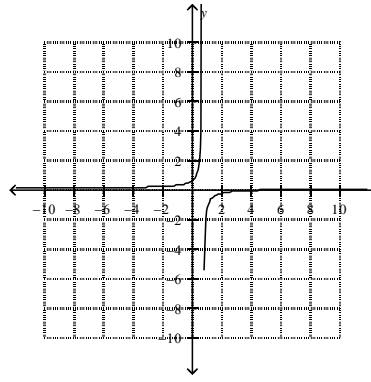
B
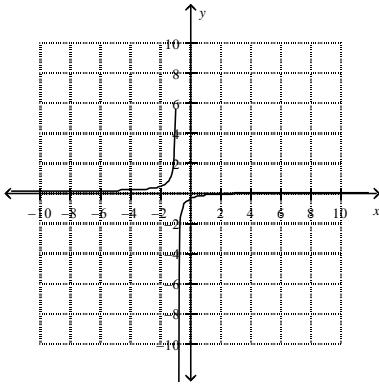
D
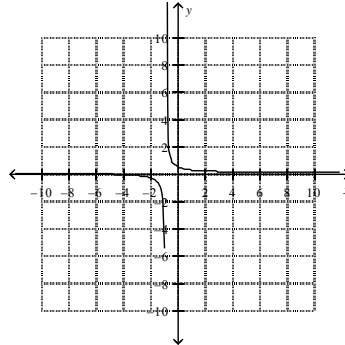
_____93. Which graph represents the reciprocal of $y = 2(x + 2)^2 - 3$?

A
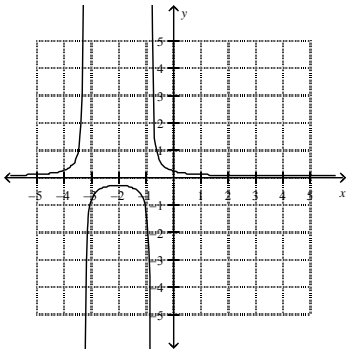
C
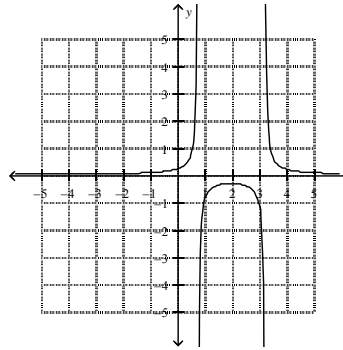
B
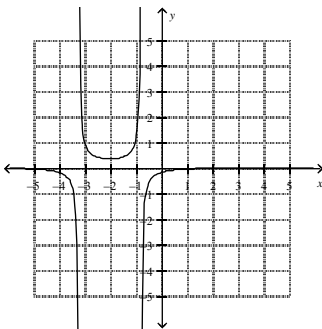
D
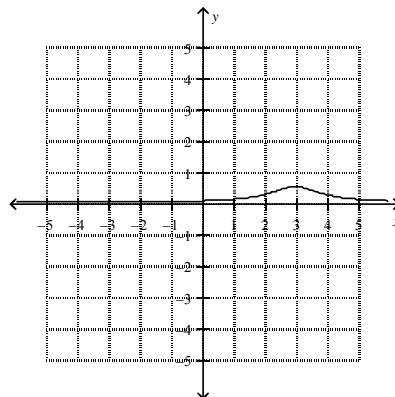
_____**94.** The equation of the vertical asymptote for the reciprocal of $y = 8x - 4$ is

A $x = -\dfrac{1}{2}$ **C** $x = \dfrac{1}{2}$

B $x = 2$ **D** $x = -2$

_____**95.** How many solutions are there to the system of equations graphed below?
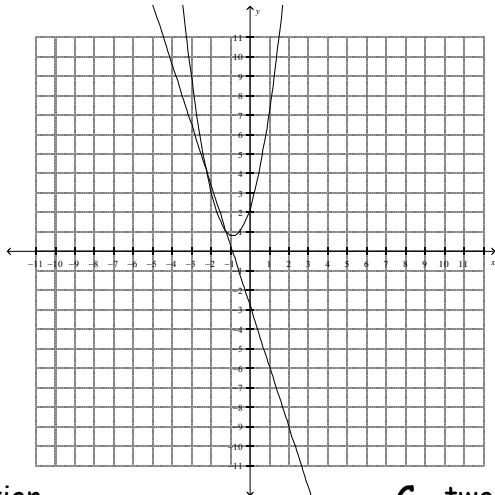
A one solution   **C** two solutions
B three solutions   **D** no real solution

_____**96.** The line $y = 9x - 4$ intersects the quadratic function $y = x^2 + 7x - 3$ at one point. What are the coordinates of the point of intersection?

A $(0, 0)$ **C** $(-1, 5)$
B $(1, -5)$ **D** $(1, 5)$

_____**97.** Find the coordinates of the point(s) of intersection of the line $y = 4x + 8$ and the quadratic function $y = -4x^2 - 5x + 8$.

A $(0, 8)$ and $(\dfrac{9}{4}, 17)$ **C** $(2, -34)$

B $(0, 0)$ **D** $(-\dfrac{9}{4}, -1)$ and $(0, 8)$

_____**98.** Solve the following system:
$y = -6x + 9$
$y = -8x^2 - 9x + 9$

A $(-\dfrac{3}{2}, -\dfrac{27}{2})$ **C** $(-\dfrac{3}{8}, \dfrac{45}{4})$ and $(0, 9)$

B $(0, \dfrac{27}{8})$ and $(\dfrac{3}{8}, \dfrac{9}{8})$ **D** $(0, 0)$

_____99. The line $y = 16x$ intersects the quadratic function $y = x^2$ at two points. What are the coordinates of the two points of intersection?

A (0,0) and (16, −256)   C (0, 0) and (16, 256)

B (1, 16) and (−16, 256)   D (2, 2) and (−16, −256)

_____100. Solve the following system of equations:

$y = 4x$

$y = 2x^2$

A (0,0) and (2, −8)   C (2, 2) and (−2, −8)

B (2, 4) and (−2, 8)   D (0, 0) and (2, 8)

_____101. What are the coordinates of the point(s) of intersection of the line $y = -7x - 5$ and the quadratic function $y = -x^2 - 15x + 4$?

A (9, 58) and (−1, −12)   C (9, −58)and(1, 12)

B (−9, 58), and (1, −12)   D (9, −58) and (1, −12)

_____102. What are the solutions for the following system of equations?

$y = 8x + 7$

$y = -x^2 - 5x + 7$

A (13, 97) and (0, 7)   C (13, −97) and (0, 7)

B (−13, −97) and (0, 7)   D (13, 97) and (0, −7)

_____103. What are the solutions for the following system of equations?

$y = -2x^2 - 9x - 4$

$y = 2x^2 - 5x - 4$

A (−1, 3) and (0, −4)   C (1, 3) and (0, −4)

B (1, −3) and (0, −4)   D (1, −3) and (0, 4)

_____104. What are the coordinates of the point(s) of intersection of the quadratic functions $y = -2x^2 - 4x + 5$ and $y = 2x^2 + 4x + 5$?

A (−2, 5) and (0, 5)   C (2, 5) and (0, 5)

B (2, −5) and (0, −5)   D (2, −5) and (0, 5)

_____**105.** The graph of $-5x - 6y \le 6$ is

A

C

B

D
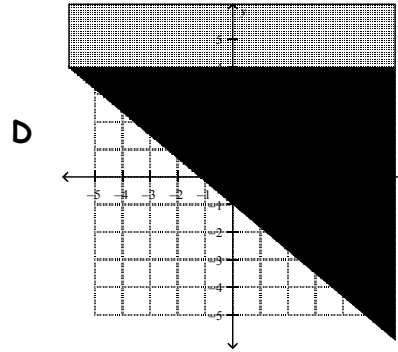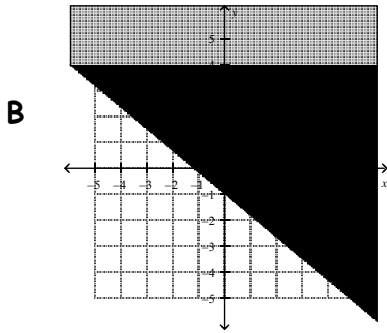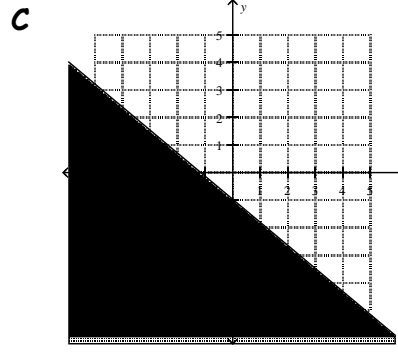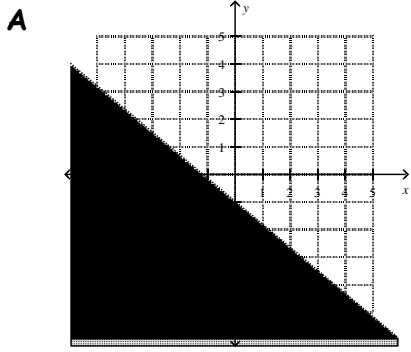
_____**106.** The graph of $-4x + 7y > 1$ is

A

C

B

D
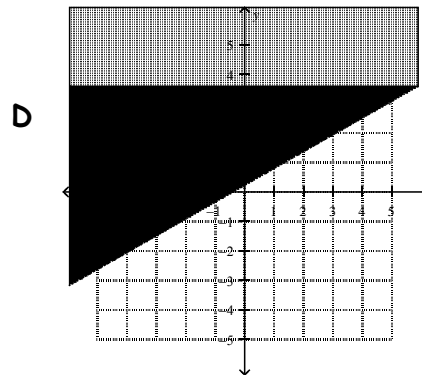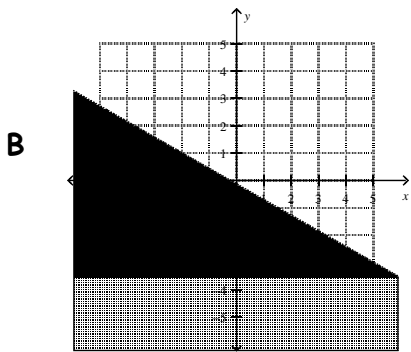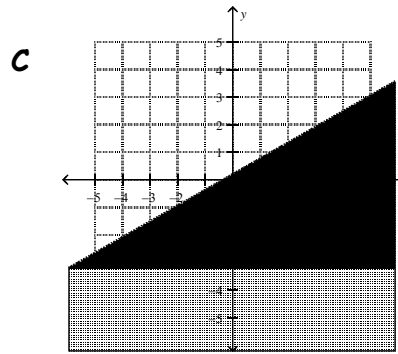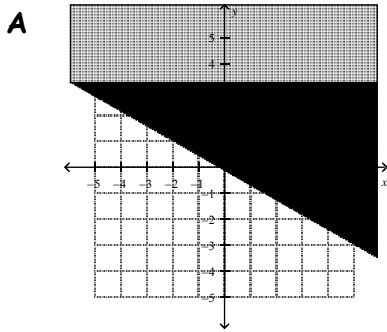
_____**107.** Which inequality represents the graph shown below?
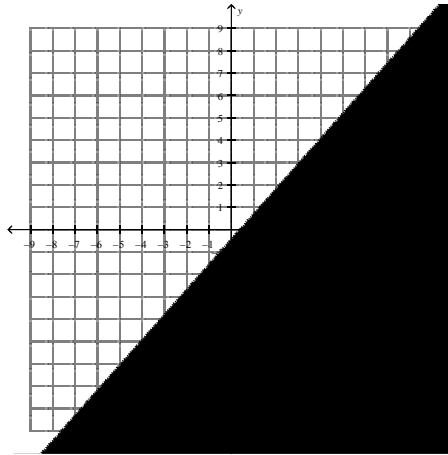
A $y > \dfrac{8}{9}x - 2$

B $y < \dfrac{8}{9}x - 2$

C $y > \dfrac{9}{8}x - \dfrac{1}{2}$

D $y < \dfrac{9}{8}x - \dfrac{1}{2}$

_____**108.** The graphical solution to $y < -\dfrac{2}{3}x + \dfrac{8}{3}$ is

A

C

B

D
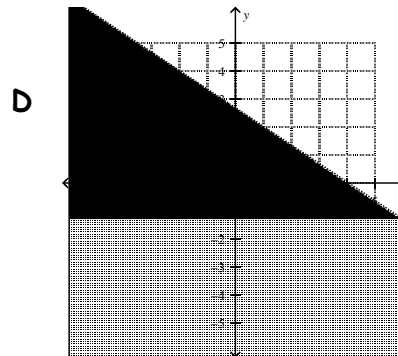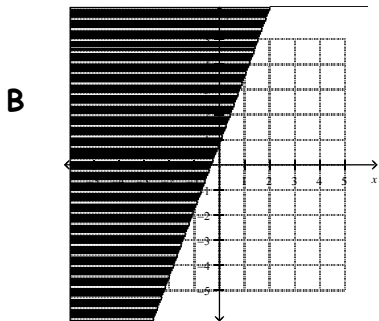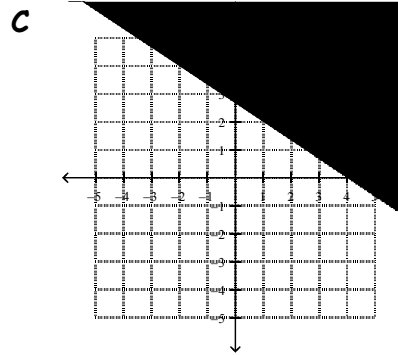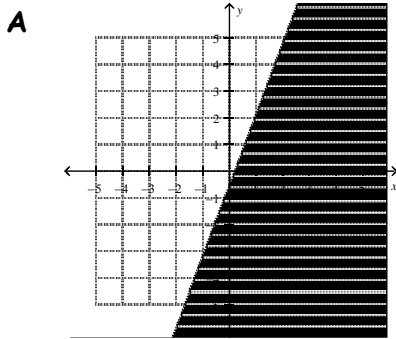
_____**109.** Which inequality represents the graph shown below?
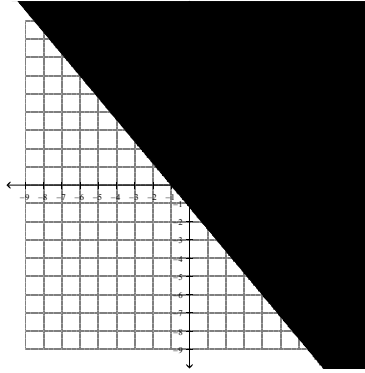
A $y > -\dfrac{5}{6}x - \dfrac{5}{6}$

B $y > -\dfrac{6}{5}x - \dfrac{6}{5}$

C $y \geq -\dfrac{6}{5}x - \dfrac{6}{5}$

D $y \geq -\dfrac{5}{6}x - \dfrac{5}{6}$

_____**110.** Which graph represents the solution to the inequality $3x^2 - 7.2x + 2 < 0$?

A
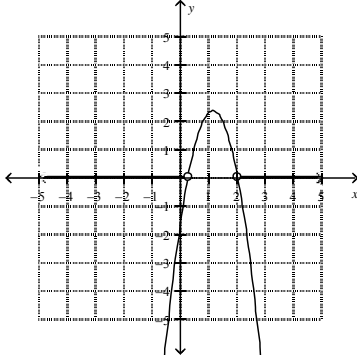
C
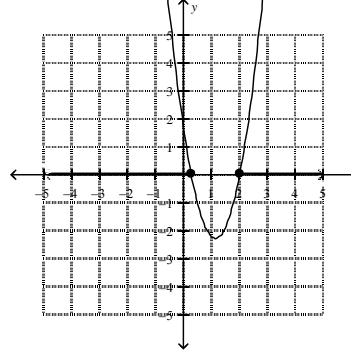
B
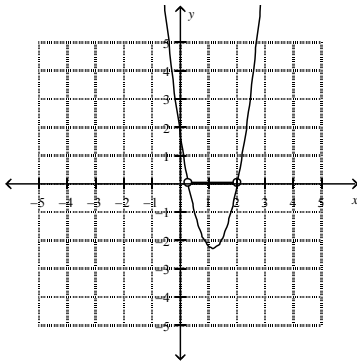
D
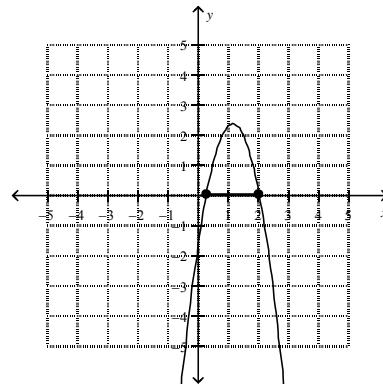
_____**111.** Which number line represents the solution set to the inequality $-2x^2 - 7.9x > 3$?

A
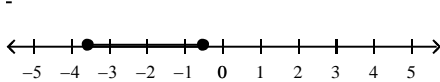
C
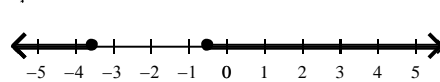
B
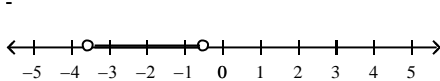
D
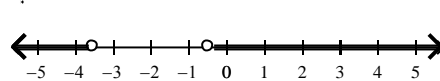
_____112. Which graph represents the solution to the inequality $2x^2 - 6x + 4 \geq 0$?

A

C

B

D
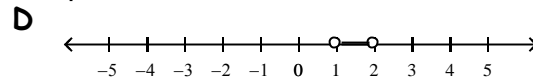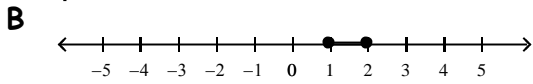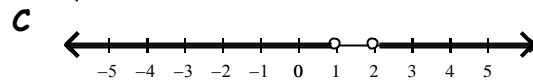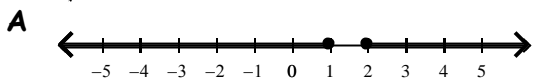
_____113. The solution set to the inequality $-2x^2 + 8x - 6 > 0$ is

A $\left\{x \mid 1 < x < 3, x \in R\right\}$

C $\left\{x \mid x < 1, x > 3, x \in R\right\}$

B $\left\{x \mid -3 < x < -1, x \in R\right\}$

D $\left\{x \mid x < -3, x > -1, x \in R\right\}$

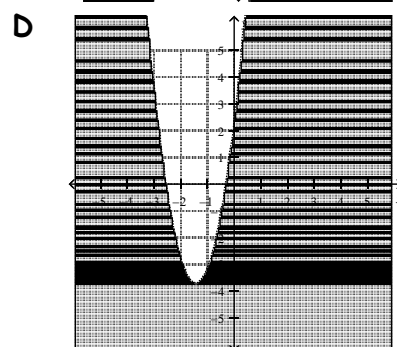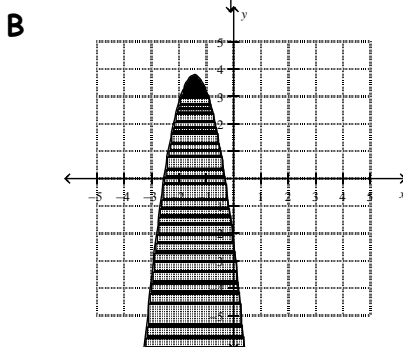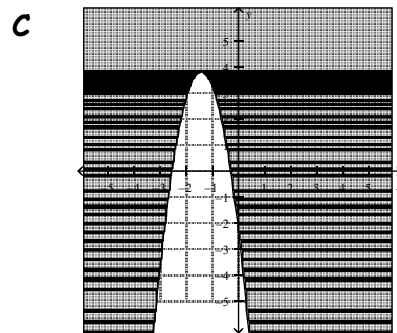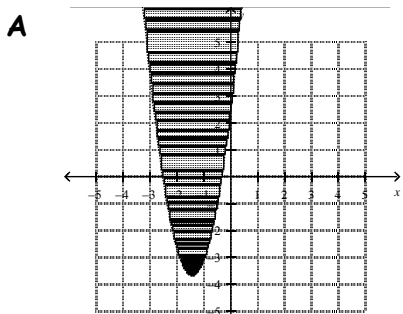_____114. The solution set to the inequality $-3x^2 \leq -9x + 6$ is

A $\left\{x \mid 1 \leq x \leq 2, x \in R\right\}$

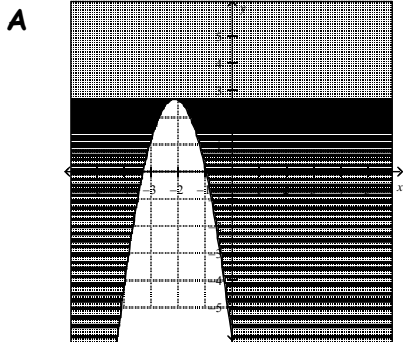C $\left\{x \mid x \leq -2 \text{ or } x \geq -1, x \in R\right\}$

B $\left\{x \mid -2 \leq x \leq -1, x \in R\right\}$

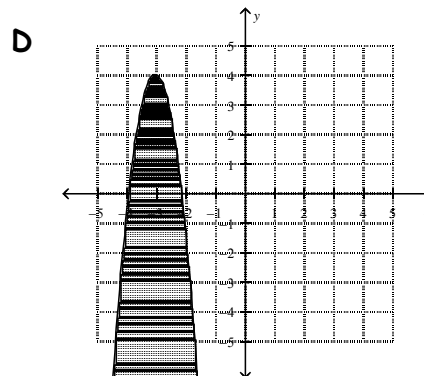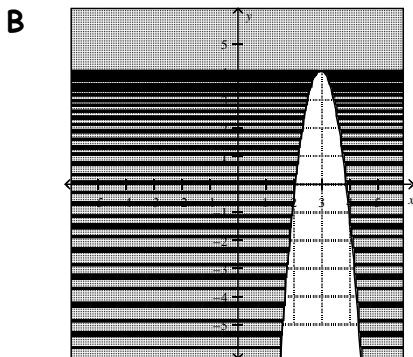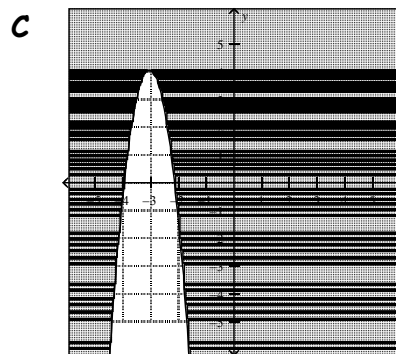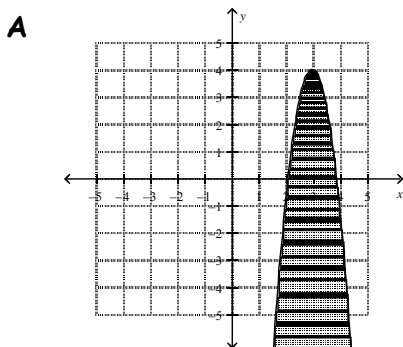D $\left\{x \mid x \leq 1 \text{ or } x \geq 2, x \in R\right\}$

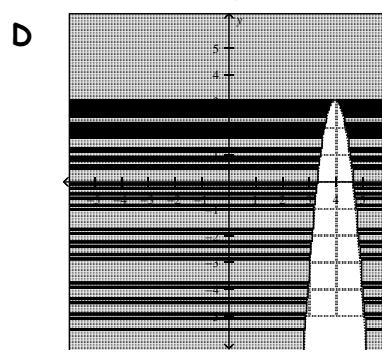_____115. Which graph represents the solution to the inequality $y > 3x^2 + 8.3x + 2$?
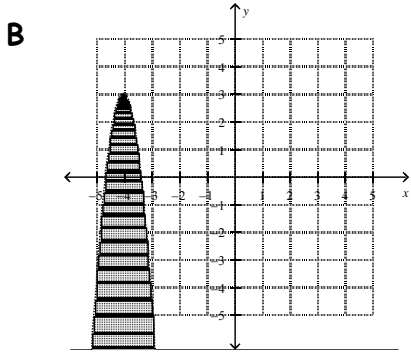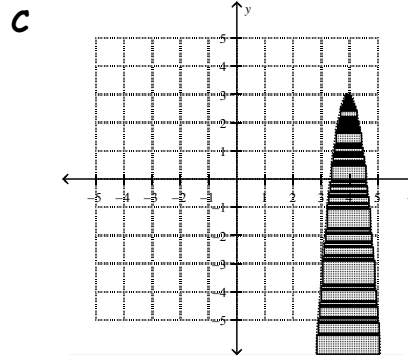
A

C

B

D

_____**116.** Which graph represents the solution to the inequality $y \geq -2x^2 - 8.3x - 6$?

A

C

B

D
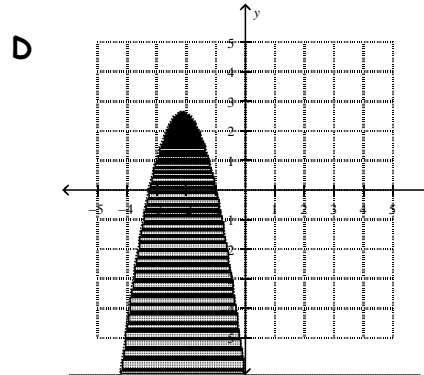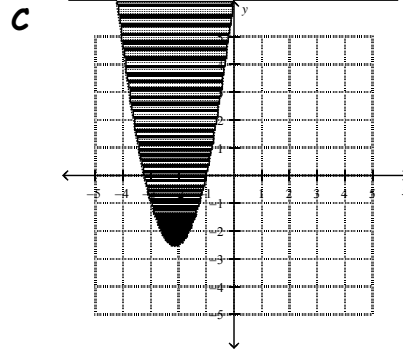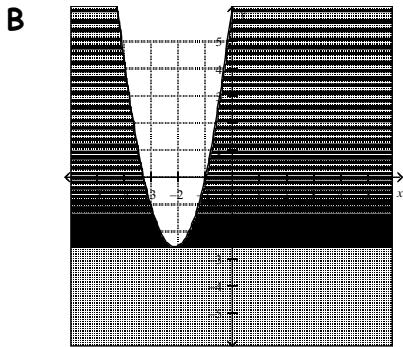
_____**117.** Which graph represents the solution to the inequality $y \leq -5(x+3)^2 + 4$?

A

C

B

D

_____**118.** The solution to the inequality $y < -7(x+4)^2 + 3$ is

A

C

B

D
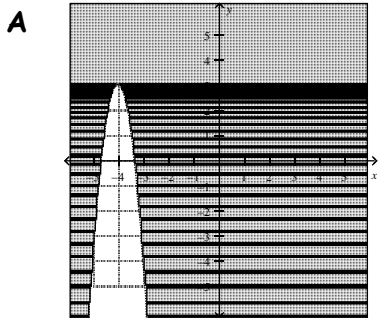
_____**119.** Which quadratic inequality is represented by the graph shown below?

A $y > -3(x+2)^2 - 7$
B $y > 3(x+2)^2 - 7$

C $y > -3(x-7)^2 - 2$
D $y \leq 3(x-7)^2 - 2$

_____**120.** Which point does *not* satisfy the inequality $y > -2(x-3)^2 + 8$?

A $(-9,-234)$
B $(1,1)$

C $(5,16)$
D $(2,0)$

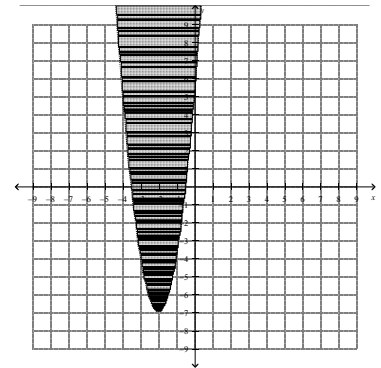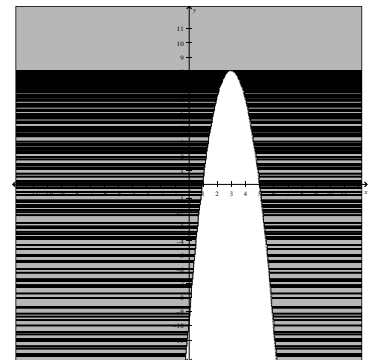| 1. ANS: C	41. ANS: B	81. ANS: B
2. ANS: A	42. ANS: B	82. ANS: C
3. ANS: B	43. ANS: C	83. ANS: B
4. ANS: C	44. ANS: D	84. ANS: D
5. ANS: A	45. ANS: A	85. ANS: B
6. ANS: B	46. ANS: A	86. ANS: A
7. ANS: C	47. ANS: C	87. ANS: C
8. ANS: A	48. ANS: C	88. ANS: D
9. ANS: A	49. ANS: A	89. ANS: C
10. ANS: A	50. ANS: C	90. ANS: D
11. ANS: D	51. ANS: D	91. ANS: D
12. ANS: C	52. ANS: B	92. ANS: D
13. ANS: D	53. ANS: C	93. ANS: A
14. ANS: A	54. ANS: D	94. ANS: C
15. ANS: D	55. ANS: B	95. ANS: C
16. ANS: C	56. ANS: B	96. ANS: D
17. ANS: D	57. ANS: B	97. ANS: D
18. ANS: C	58. ANS: D	98. ANS: C
19. ANS: D	59. ANS: C	99. ANS: C
20. ANS: C	60. ANS: D	100. ANS: D
21. ANS: D	61. ANS: C	101. ANS: B
22. ANS: C	62. ANS: B	102. ANS: B
23. ANS: B	63. ANS: C	103. ANS: A
24. ANS: A	64. ANS: B	104. ANS: A
25. ANS: B	65. ANS: A	105. ANS: C
26. ANS: C	66. ANS: C	106. ANS: D
27. ANS: C	67. ANS: B	107. ANS: D
28. ANS: A	68. ANS: C	108. ANS: D
29. ANS: C	69. ANS: B	109. ANS: C
30. ANS: B	70. ANS: B	110. ANS: B
31. ANS: C	71. ANS: D	111. ANS: B
32. ANS: B	72. ANS: C	112. ANS: A
33. ANS: B	73. ANS: D	113. ANS: A
34. ANS: B	74. ANS: C	114. ANS: D
35. ANS: A	75. ANS: A	115. ANS: A
36. ANS: B	76. ANS: A	116. ANS: A
37. ANS: C	77. ANS: D	117. ANS: D
38. ANS: D	78. ANS: A	118. ANS: B
39. ANS: D	79. ANS: B	119. ANS: B
40. ANS: B	80. ANS: D	120. ANS: D