

Use either $f'(a) = \lim_{h \rightarrow 0} \frac{f(a+h) - f(a)}{h}$ or $f'(a) = \lim_{x \rightarrow a} \frac{f(x) - f(a)}{x - a}$

A. Calculate the slope of the tangent line to each of the following curves at the given value.

1. $f(x) = 7x - 4x^2$; $x = 2$

2. $f(x) = \sqrt{2x + 4}$; $x = 6$

3. $f(x) = \frac{2x + 1}{3x - 1}$; $x = 1$

B. Calculate the **equation** of the tangent line to each of the following curves at the given point.

1. $f(x) = 3x^2 - 1x$ at $(1, 2)$

2. $f(x) = 2x^2 - 5$ at $(2, 3)$

3. $f(x) = \sqrt{3x + 1}$ at $(5, 4)$

4. $f(x) = \frac{3x+8}{x-4}$ at $(0,-2)$

5. $f(x) = \frac{x+5}{3x+2}$ at $x=2$

6. $f(x) = \sqrt{x}$ at $(1,1)$

7. $f(x) = \frac{1}{\sqrt{x}}$ at $(1,1)$

8. $f(x) = \sqrt{4x-3}$ at $(3,3)$

9. Hayes throws an airball into the air with initial velocity of 40 ft/sec. Its height (in feet) after t seconds is given by $h(t) = 40t - 16t^2$. What is the ball's velocity at $t=2$ seconds?