

## 12-3-C Problem Set

Find the slope of the graph of  $f(x)$  at the given point. Use the result to find an equation of the tangent line to that graph at that point. Use DESMOS to graph the function and the tangent line to verify the result.

$$27. \quad f(x) = x^2 - 1 \quad ; \quad (2, 3)$$

$$28. \quad f(x) = x^3 - x \quad ; \quad (2, 6)$$

$$29. \quad f(x) = \sqrt{x + 1} \quad ; \quad (3, 2)$$

$$30. \quad f(x) = 2x + \frac{4}{x} \quad ; \quad (2, 6)$$

## Answer Key

$$\begin{aligned} 27. \quad f'(x) &= 2x \\ f'(2) &= 4 \\ y &= 4x - 15 \end{aligned}$$

$$\begin{aligned} 28. \quad f'(x) &= 3x^2 - 1 \\ f'(2) &= 11 \\ y &= 11x - 16 \end{aligned}$$

$$\begin{aligned} 29. \quad f'(x) &= \frac{1}{2\sqrt{x+1}} \\ f'(3) &= \frac{1}{4} \\ y &= \frac{1}{4}x + \frac{5}{4} \end{aligned}$$

$$\begin{aligned} 29. \quad f'(x) &= 2 - \frac{4}{x^2} \\ f'(2) &= 1 \\ y &= x + 4 \end{aligned}$$