

## Derivative at a Value

**For each problem, find the derivative of the function at the given value.**

1)  $y = x^2 + 4x$  at  $x = -5$

2)  $y = -x^3 + 4x^2 - 4$  at  $x = 4$

3)  $y = \frac{20}{x^2 + 5}$  at  $x = 3$

4)  $y = \frac{2}{x + 1}$  at  $x = 5$

5)  $y = (-x + 4)^{\frac{1}{2}}$  at  $x = 0$

6)  $y = (-3x + 9)^{\frac{1}{2}}$  at  $x = -5$

7)  $y = e^{-x+2}$  at  $x = 4$

8)  $y = -\ln(x + 3)$  at  $x = 5$

9)  $y = 2\sin(2x)$  at  $x = -\frac{\pi}{2}$

10)  $y = -\tan(2x)$  at  $x = -\pi$

## Derivative at a Value

For each problem, find the derivative of the function at the given value.

1)  $y = x^2 + 4x$  at  $x = -5$

$$\left. \frac{dy}{dx} \right|_{x=-5} = -6$$

2)  $y = -x^3 + 4x^2 - 4$  at  $x = 4$

$$\left. \frac{dy}{dx} \right|_{x=4} = -16$$

3)  $y = \frac{20}{x^2 + 5}$  at  $x = 3$

$$\left. \frac{dy}{dx} \right|_{x=3} = -\frac{30}{49}$$

4)  $y = \frac{2}{x + 1}$  at  $x = 5$

$$\left. \frac{dy}{dx} \right|_{x=5} = -\frac{1}{18}$$

5)  $y = (-x + 4)^{\frac{1}{2}}$  at  $x = 0$

$$\left. \frac{dy}{dx} \right|_{x=0} = -\frac{1}{4}$$

6)  $y = (-3x + 9)^{\frac{1}{2}}$  at  $x = -5$

$$\left. \frac{dy}{dx} \right|_{x=-5} = -\frac{\sqrt{6}}{8}$$

7)  $y = e^{-x+2}$  at  $x = 4$

$$\left. \frac{dy}{dx} \right|_{x=4} = -\frac{1}{e^2}$$

8)  $y = -\ln(x + 3)$  at  $x = 5$

$$\left. \frac{dy}{dx} \right|_{x=5} = -\frac{1}{8}$$

9)  $y = 2\sin(2x)$  at  $x = -\frac{\pi}{2}$

$$\left. \frac{dy}{dx} \right|_{x=-\frac{\pi}{2}} = -4$$

10)  $y = -\tan(2x)$  at  $x = -\pi$

$$\left. \frac{dy}{dx} \right|_{x=-\pi} = -2$$