

Derivative at a Value

Date _____ Period _____

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 $x = -\pi$

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