

Slope at a Point

Find the exact slope of the curve at the given point.

1.

$$f(x) = 2 \cdot \csc(-3 \cdot x) + 1$$

$$\text{at } x = \frac{-1}{2} \cdot \pi$$

Find the slope.

2.

$$f(x) = \frac{-1 \cdot x^2}{x + 1}$$

$$\text{at } x = 0$$

Find the slope.

3.

$$f(x) = x^2 + 3$$

$$\text{at } x = 0$$

Find the slope.

4.

$$f(x) = (2)^{3 \cdot x - 1}$$

$$\text{at } x = \frac{1}{2}$$

Find the slope.

5.

$$f(x) = 2 \cdot \csc\left(\frac{-1}{2} \cdot x\right) + 2$$

$$\text{at } x = \frac{-4}{3} \cdot \pi$$

Find the slope.

6.

$$f(x) = \frac{2 \cdot x - 2 \cdot x^2 - 3}{-x - 3}$$

$$\text{at } x = \frac{-1}{2}$$

Find the slope.

Slope at a Point

Find the exact slope of the curve at the given point.

7.

$$f(x) = \frac{1}{2} \cdot x + 3 \cdot x^2 - 2 \cdot x^3 + 1$$

$$\text{at } x = -3$$

Find the slope.

8.

$$f(x) = -3 \cdot (3)^{-1 \cdot x} + 2$$

$$\text{at } x = \frac{3}{2}$$

Find the slope.

Slope at a Point

Answer Key

Find the exact slope of the curve at the given point.

1. $f(x) = 2 \cdot \csc(-3 \cdot x) + 1$
 $f'(x) = 6 \cdot \csc(-3 \cdot x) \cdot \cot(-3 \cdot x)$
 $f(x_0) = -1$
 $f'(x_0) = 0$
 $\sin(-3 \cdot x) \neq 0.$

2. $f(x) = \frac{-1 \cdot x^2}{x+1}$
 $f'(x) = \frac{-2 \cdot x \cdot (x+1) + x^2}{(x+1)^2}$
 $f(x_0) = 0$
 $f'(x_0) = 0$
 $x+1 \neq 0$ (original denominator).

3. $f(x) = x^2 + 3$
 $f'(x) = 2 \cdot x$
 $f(x_0) = 3$
 $f'(x_0) = 0$
 All real x.

4. $f(x) = (2)^{3 \cdot x - 1}$
 $f'(x) = 3 \cdot \ln(2) \cdot (2)^{3 \cdot x - 1}$
 $f(x_0) = (2)^{\frac{1}{2}}$
 $f'(x_0) = 3 \cdot \ln(2) \cdot (2)^{\frac{1}{2}}$
 All real x.

5. $f(x) = 2 \cdot \csc\left(\frac{-1}{2} \cdot x\right) + 2$
 $f'(x) = \csc\left(\frac{-1}{2} \cdot x\right) \cdot \cot\left(\frac{-1}{2} \cdot x\right)$
 $f(x_0) = \frac{4}{3} \cdot \sqrt{3} + 2$
 $f'(x_0) = \frac{-2}{3}$
 $\sin(-1/2 \cdot x) \neq 0.$

6. $f(x) = \frac{2 \cdot x - 2 \cdot x^2 - 3}{-x - 3}$
 $f'(x) = \frac{(-4 \cdot x + 2)(-x - 3) + 2 \cdot x - 2 \cdot x^2 - 3}{(-x - 3)^2}$
 $f(x_0) = \frac{9}{5}$
 $f'(x_0) = \frac{-58}{25}$
 $-1 \cdot x - 3 \neq 0$ (original denominator).

Math Sheet

Name _____ Score _____ Teacher _____ Date _____

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Answer Key

Find the exact slope of the curve at the given point.

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

$$f'(x) = 6x - 6x^2 + \frac{1}{2}$$

$$f'(x_0) = \frac{161}{2}$$

$$f'(x_0) = \frac{-143}{2}$$

All real x.

8. $f(x) = -3 \cdot (3)^{-1-x} + 2$

$$f'(x) = 3 \cdot \ln(3) \cdot (3)^{-1-x}$$

$$f'(x_0) = -3 \cdot (3)^{-2} + 2$$

$$f'(x_0) = 3 \cdot \ln(3) \cdot (3)^{-2}$$

All real x.