Name_____ ID: 1

Test Review 1

Date_____ Period_____

For each problem, find the average rate of change of the function over the given interval.

1) $f(x) = -\dfrac{1}{x}$; [1, 2]

$\dfrac{1}{2}$

2) $y = -\dfrac{1}{x-3}$; [0, 1]

$\dfrac{1}{6}$

3) $y = -2x^2 - 1$; [−1, 0]

2

4) $f(x) = 2x^2 + 2x - 1$; [0, 1]

4

Use the definition of the derivative to find the derivative of each function with respect to *x*.

5) $f(x) = -\dfrac{1}{x-2}$

$f'(x) = \dfrac{1}{x^2 - 4x + 4}$

6) $y = -\dfrac{2}{2x+5}$

$\dfrac{dy}{dx} = \dfrac{4}{4x^2 + 20x + 25}$

7) $y = 2x^2 + 3$

$\dfrac{dy}{dx} = 4x$

8) $f(x) = -3x - 5$

$f'(x) = -3$

Differentiate each function with respect to *x*.

9) $y = x\sqrt{3} + 2\sqrt[3]{x} - \dfrac{1}{3}\sqrt[4]{x}$

$\dfrac{dy}{dx} = \sqrt{3} + \dfrac{2}{3}x^{-\frac{2}{3}} - \dfrac{1}{12}x^{-\frac{3}{4}}$

10) $f(x) = 2x^2 - 2x^{\frac{3}{5}} + \dfrac{2}{5x}$

$f'(x) = 4x - \dfrac{6}{5}x^{-\frac{2}{5}} - \dfrac{2x^{-2}}{5}$

11) $y = 5x^3 - 3x^{-2} + 2x^{-5}$

$\dfrac{dy}{dx} = 15x^2 + \dfrac{6}{x^3} - \dfrac{10}{x^6}$

12) $f(x) = 4 + \dfrac{4}{x^3} + \dfrac{4}{x^4}$

$f'(x) = -\dfrac{12}{x^4} - \dfrac{16}{x^5}$