Definition of the Derivative

Date_____ Period____

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

1) $y = \sqrt{5x + 4}$

2) $y = 5x^2 + 3x + 2$

3) $y = \sqrt{x + 5}$

4) $y = 4x^2 + 2x + 4$

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

6) $y = x^2 - 2x + 1$

7) $y = -\dfrac{2}{2x+3}$

8) $y = -\dfrac{2}{2x-1}$

9) $y = 3x^2 + x - 3$

10) $y = -\dfrac{2}{x-4}$

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

12) $y = \sqrt{-4x+2}$

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Date_____ Period____

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

1) $y = \sqrt{5x + 4}$

$\frac{dy}{dx} = \frac{5}{2\sqrt{5x + 4}}$

2) $y = 5x^2 + 3x + 2$

$\frac{dy}{dx} = 10x + 3$

3) $y = \sqrt{x + 5}$

$\frac{dy}{dx} = \frac{1}{2\sqrt{x + 5}}$

4) $y = 4x^2 + 2x + 4$

$\frac{dy}{dx} = 8x + 2$

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

$\frac{dy}{dx} = 10x - 4$

6) $y = x^2 - 2x + 1$

$\frac{dy}{dx} = 2x - 2$

7) $y = -\dfrac{2}{2x+3}$

$\dfrac{dy}{dx} = \dfrac{4}{4x^2+12x+9}$

8) $y = -\dfrac{2}{2x-1}$

$\dfrac{dy}{dx} = \dfrac{4}{4x^2-4x+1}$

9) $y = 3x^2 + x - 3$

$\dfrac{dy}{dx} = 6x + 1$

10) $y = -\dfrac{2}{x-4}$

$\dfrac{dy}{dx} = \dfrac{2}{x^2-8x+16}$

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

$\dfrac{dy}{dx} = -8x + 3$

12) $y = \sqrt{-4x+2}$

$\dfrac{dy}{dx} = -\dfrac{2}{\sqrt{-4x+2}}$