Calculus
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Basic Differentiation Rules

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

1) $f(x) = -5x - 2$

2) $f(x) = -2x - 2$

3) $f(x) = \sqrt{-4x + 1}$

4) $f(x) = -3x + 1$

5) $f(x) = \sqrt{5x - 3}$

6) $f(x) = 3x - 4$

Differentiate each function with respect to *x*.

7) $f(x) = 3x^{\frac{2}{5}}$

8) $f(x) = -\frac{3}{5}x^{-2}$

9) $f(x) = -\frac{5}{x}$

10) $f(x) = \frac{2}{x^4}$

11) $f(x) = \frac{5}{4}x^{-5}$

12) $f(x) = 4x^{-3}$

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

14) $f(x) = \frac{2}{5}x^{\frac{3}{4}}$

15) $f(x) = 4$

16) $f(x) = -\frac{1}{4}x^{-3}$

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

18) $f(x) = \frac{5}{2}x^{\frac{1}{2}}$

19) $f(x) = \frac{4}{5}x$

20) $f(x) = \frac{3}{5x^2}$

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Answers to Basic Differentiation Rules

1) $f'(x) = -5$

2) $f'(x) = -2$

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

4) $f'(x) = -3$

5) $f'(x) = \dfrac{5}{2\sqrt{5x-3}}$

6) $f'(x) = 3$

7) $f'(x) = \dfrac{6}{5x^{\frac{3}{5}}}$

8) $f'(x) = \dfrac{6}{5x^3}$

9) $f'(x) = \dfrac{5}{x^2}$

10) $f'(x) = -\dfrac{8}{x^5}$

11) $f'(x) = -\dfrac{25}{4x^6}$

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

13) $f'(x) = 6x$

14) $f'(x) = \dfrac{3}{10x^{\frac{1}{4}}}$

15) $f'(x) = 0$

16) $f'(x) = \dfrac{3}{4x^4}$

17) $f'(x) = -\dfrac{2}{x^{\frac{1}{3}}}$

18) $f'(x) = \dfrac{5}{4x^{\frac{1}{2}}}$

19) $f'(x) = \dfrac{4}{5}$

20) $f'(x) = -\dfrac{6}{5x^3}$

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