Assignment:Derivative of Polynomials

Differentiate each function with respect to *x*.

1) $y = x^4 + \dfrac{3}{4}\sqrt[5]{x^2}$

2) $y = 5\sqrt[5]{x^2} + x^{-5}$

3) $y = -5 - \dfrac{5}{3}x^{-4}$

4) $y = 2 + 4x^{-4}$

5) $y = \sqrt[3]{x} + \dfrac{2}{x^4}$

6) $y = 2x^4 + \sqrt[5]{x^2}$

7) $y = x^3 \sqrt{2} + 3 + 3x^{-1}$

8) $y = x^5 + x^{\frac{3}{5}} \sqrt{5} + 5x^{-1}$

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

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

10) $y = \dfrac{1}{2x + 4}$

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

12) $y = \dfrac{1}{x + 1}$

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

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

Answers to Assignment: Derivative of Polynomials

1) $\dfrac{dy}{dx} = 4x^3 + \dfrac{3}{10x^{\frac{3}{5}}}$

2) $\dfrac{dy}{dx} = \dfrac{2}{x^{\frac{3}{5}}} - \dfrac{5}{x^6}$

3) $\dfrac{dy}{dx} = \dfrac{20}{3x^5}$

4) $\dfrac{dy}{dx} = -\dfrac{16}{x^5}$

5) $\dfrac{dy}{dx} = \dfrac{1}{3x^{\frac{2}{3}}} - \dfrac{8}{x^5}$

6) $\dfrac{dy}{dx} = 8x^3 + \dfrac{2}{5x^{\frac{3}{5}}}$

7) $\dfrac{dy}{dx} = 3x^2\sqrt{2} - \dfrac{3}{x^2}$

8) $\dfrac{dy}{dx} = 5x^4 + \dfrac{3\sqrt{5}}{5x^{\frac{2}{5}}} - \dfrac{5}{x^2}$

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

10) $\dfrac{dy}{dx} = -\dfrac{1}{2x^2 + 8x + 8}$

11) $\dfrac{dy}{dx} = \dfrac{1}{\sqrt{2x + 4}}$

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

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

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