

Section 3.3 Even Answers

$$2. \frac{dy}{dx} = x^2 - 1 \quad \frac{d^2y}{dx^2} = 2x$$

$$4. \frac{dy}{dx} = 2x + 1 \quad \frac{d^2y}{dx^2} = 2$$

$$6. \frac{dy}{dx} = -1 + 2x - 3x^2 \quad \frac{d^2y}{dx^2} = 2 - 6x$$

$$8. \frac{dy}{dx} = 15x^2 - 15x^4 \quad \frac{d^2y}{dx^2} = 30x - 60x^3$$

$$10. \frac{dy}{dx} = -x^{-5} + x^{-4} - x^{-3} + x^{-2} \quad \frac{d^2y}{dx^2} = 5x^{-6} - 4x^{-5} + 3x^{-4} - 2x^{-3}$$

$$12. \text{(a) } \frac{dy}{dx} = \frac{x^2 - 3}{x^2} \quad \text{(b) } \frac{dy}{dx} = 1 - \frac{3}{x^2}$$

$$14. \frac{dy}{dx} = -\frac{5}{x^2} + \frac{2}{x^3}$$

$$16. \frac{dy}{dx} = \frac{x^2 - 2x - 1}{(1 + x^2)^2}$$

$$24. \text{(a) } 2 \quad \text{(b) } -10 \quad \text{(c) } \frac{10}{9} \quad \text{(d) } -12$$

$$26. m_{\tan} = \frac{3}{2}$$

$$28. \frac{dy}{dx} = 3x^2 + 1 \quad \text{which is never less than 1 so the smallest slope is 1.}$$

The slope is 4 when $4 = 3x^2 + 1$ so $x = \pm 1$

$$30. y_{\tan} = 12(x + 2) - 8 \quad x\text{-intercept at } -\frac{4}{3} \quad y\text{-intercept at } 16$$

$$34. \frac{ds}{dt} = 9.8t \quad \frac{d^2s}{dt^2} = 9.8$$