

Section 7.2

$$\textcircled{8} \text{ (a)} \int \sqrt{x^2} dx = \int x^{3/2} dx = \frac{x^{3/2+1}}{3/2+1} + C = \frac{2x^{5/2}}{5} + C$$

$$\text{(b)} \int \frac{1}{x^6} dx = \int x^{-6} dx = \frac{x^{-6+1}}{-6+1} + C = \frac{-1}{5x^5} + C$$

$$\text{(c)} \int x^{-7/8} dx = \frac{x^{-7/8+1}}{-7/8+1} + C = \frac{x^{1/8}}{1/8} + C = 8x^{1/8} + C$$

$$\textcircled{9} \text{ (a)} \int \frac{1}{2x^3} dx = \frac{1}{2} \int \frac{1}{x^3} dx = \frac{1}{2} \int x^{-3} dx = \frac{1}{2} \left[\frac{x^{-3+1}}{-3+1} \right] + C = \frac{-1}{4x^2} + C$$

$$\text{(b)} \int (u^3 - 2u + 7) du = \int u^3 du - \int 2u du + \int 7 du = \int u^3 du - 2 \int u du + 7 \int du \\ = \frac{u^4}{4} - 2 \cdot \left(\frac{u^2}{2} \right) + 7u + C = \frac{u^4}{4} - u^2 + 7u + C$$

$$\textcircled{10} \int (x^{2/3} - 4x^{-1/5} + 4) dx = \int x^{2/3} dx - 4 \int x^{-1/5} dx + 4 \int dx = \frac{3x^{5/3}}{5} - 4 \left(\frac{5x^{4/5}}{4} \right) + 4x + C \\ = \frac{3x^{5/3}}{5} - 5x^{4/5} + 4x + C$$

$$\textcircled{14} \int (2+y^2)^2 dy = \int (4 + 4y^2 + y^4) dy = 4 \int dy + 4 \int y^2 dy + \int y^4 dy = 4y + \frac{4y^3}{3} + \frac{y^5}{5} + C$$

$$\left(4y + \frac{4y^3}{3} + \frac{y^5}{5} + C \right)' = 4 + \frac{4}{3} \cdot 3y^2 + \frac{1}{5} \cdot 5y^4 + 0 = 4 + 4y^2 + y^4 = (2+y^2)^2 \checkmark$$

$$\textcircled{18} \int \frac{1-2t^3}{t^3} dt = \int \left(\frac{1}{t^3} - 2 \right) dt = \int t^{-3} dt - 2 \int dt = \frac{t^{-2}}{-2} - 2t + C = \frac{-1}{2t^2} - 2t + C$$

$$\left(\frac{-1}{2t^2} - 2t + C \right)' = \left(\frac{t^{-2}}{-2} - 2t + C \right)' = \left(\frac{-1}{2} \cdot -2t^{-3} - 2 + 0 \right) = t^{-3} - 2 = \frac{1-2t^3}{t^3} \checkmark$$