

$$8. f(x) = \frac{3}{(4x)^2} = \frac{3}{16x^2} \quad \square \text{ in}$$

$$= \frac{3}{16} x^{-2}$$

$$f'(x) = -2 \left(\frac{3}{16} \right) x^{-3} = -\frac{3}{8} x^{-3} = -\frac{3}{8x^3}$$

$$7. f(x) = \frac{3}{4x^2} = \frac{3}{4} x^{-2}$$

$$f'(x) = -2 \left(\frac{3}{4} \right) x^{-3} = -\frac{3}{2} x^{-3} = -\frac{3}{2x^3}$$

$$10. f(x) = \sqrt{x} \left(\sqrt[3]{x} + \sqrt[4]{x} \right) = x^{\frac{1}{2}} \left(x^{\frac{1}{3}} + x^{\frac{1}{4}} \right)$$

$$\cdot \left(x^{\frac{1}{2}} \right) \left(x^{\frac{1}{3}} \right) + \left(x^{\frac{1}{2}} \right) \left(x^{\frac{1}{4}} \right) = x^{\frac{1}{2} + \frac{1}{3}} + x^{\frac{1}{2} + \frac{1}{4}}$$

$$= x^{\frac{3}{6} + \frac{2}{6}} + x^{\frac{2}{4} + \frac{1}{4}} = x^{\frac{5}{6}} + x^{\frac{3}{4}}$$