

Sec. 8.2 Multiplying and Factoring

Problem 1:

$$a. 5m(3m^3 - m^2 + 8) \begin{array}{l} \text{distribute} \\ * \text{ Multiply} \\ \text{Add exponents} \end{array}$$

$$15m^4 - 5m^3 + 40m$$

$$b. 6x(2x^3 + 7x)$$

$$12x^4 + 42x^2$$

Problem 2: Factor out GCF

$$a. 12x^2 + 8x \quad \begin{array}{l} \frac{12x^2}{4x} + \frac{8x}{4x} \\ 4x \cdot 3x + 4x \cdot 2 \end{array}$$

$$4x(3x + 2)$$

$$b. \frac{3x^4}{3x} - \frac{9x^2}{3x} - \frac{12x}{3x}$$

$$3x \cdot x^3 - 3x \cdot 3x - 3x \cdot 4$$

$$3x(x^3 - 3x - 4)$$

$$c. \frac{6z^5}{2z^3} - \frac{42z^4}{2z^3} + \frac{14z^3}{2z^3}$$

$$2z^3(3z^2 - 21z + 7)$$

$$d. \frac{3a}{3} - \frac{9}{3}$$

$$3(a - 3)$$

$$e. \frac{15a}{5} - \frac{5}{5}$$

$$5(3a - 1)$$

$$f. \frac{9x^6}{3x^2} + \frac{15x^4}{3x^2} + \frac{12x^2}{3x^2}$$

$$3x^2(3x^4 + 5x^2 + 4)$$

$$g. \frac{17xy^3}{17xy^2} + \frac{51x^2y^2}{17xy^2}$$

$$17xy^2(y + 3x)$$

$$h. \frac{9m^4n^5}{9m^2n^3} - \frac{27m^2n^3}{9m^2n^3}$$

$$9m^2n^3(m^2n^2 - 3)$$

A circular mirror is surrounded by a square metal frame. The radius of the mirror is $6x$. The side length of the metal frame is $18x$. What is the area of the metal frame?

$$\begin{aligned} & 18x \cdot 18x - \pi(6x)^2 \\ & 324x^2 - 36\pi x^2 \\ & 36x^2(9 - \pi) \end{aligned}$$