

$$(2x^3 - 3)(4x^3 + 6) = ?$$

$$8x^6 + 12\cancel{x^3} - 12\cancel{x^3} - 18$$

$$\boxed{8x^6 - 18}$$

$$\underline{(2x - 3)(x + 6)(x - 1)} = ?$$

$$= 2x^2 + 12x - 3x - 18$$

$$= (2x^2 + 9x - 18)(x - 1)$$

$$= (x - 1)(2x^2 + 9x - 18)$$

$$= 2x^3 + 9x^2 - 18x - 2x^2 - 9x + 18$$

$$= \boxed{2x^3 + 7x^2 - 27x + 18}$$

Factor

$$\frac{3x}{3} + \frac{3y}{3} \left(-\frac{4x^2}{-4x} - \frac{4xy}{-4x} \right)$$

$$= 3(x+y) - 4x(x+y)$$

$$= \boxed{(3-4x)(x+y)}$$

Factor

$$x^2 + 3x - 10$$

$$= \boxed{(x+5)(x-2)}$$

$$\begin{array}{r|l} -10 & 3 \\ \hline 5(-2) & 5-2=3 \end{array}$$

$$= \frac{x^2}{x} + \frac{5x}{x} - \frac{2x}{-2} - \frac{10}{-2}$$

$$= x(x+5) - 2(x+5)$$

$$= (x-2)(x+5)$$

Factor

$$64x^2 - 9$$

$$= (8x)^2 - (3)^2$$

$$= \boxed{(8x - 3)(8x + 3)}$$

Difference of Squares

$$x^2 - y^2 = (x - y)(x + y)$$

$$\left(\sqrt{64x^2} - \sqrt{9}\right)\left(\sqrt{64x^2} + \sqrt{9}\right)$$

Factor

$$64x^3 - 125$$

$$(4x)^3 - (5)^3$$

Difference of Cubes

$$x^3 - y^3 = (x - y)(x^2 + xy + y^2)$$

$$= (4x - 5)((4x)^2 + 4x \cdot 5 + 5^2)$$

$$= \boxed{(4x - 5)(16x^2 + 20x + 25)}$$