

$$1. (2z^2 + 3z - 1) + (4z^2 - 5z - 6) = 6z^2 - 2z - 7$$

$$2. (9y^2 - 11y - 5) - (4y^2 - 3y) = 9y^2 - 11y - 5 - 4y^2 + 3y = 5y^2 - 8y - 5$$

$$3a. (2w + 5)(3r - 4) = 6rw - 8w + 15r - 20$$

$$3b. (2h - 3k)^2 = (2h - 3k)(2h - 3k) = 4h^2 - 6hk - 6hk + 9k^2 = 4h^2 - 12hk + 9k^2$$

$$3c. [(c - p) + 3][(c - p) - 3] = (c - p)^2 - 9 = (c^2 - 2cp + p^2) - 9 = c^2 - 2cp + p^2 - 9$$

$$4a. \frac{x^2 + 11x + 16}{x - 5} = x + 16 - \frac{96}{x - 5}$$

$$4b. \frac{4y^4 + 6y^3 + 3y - 1}{2y^2 + 1} = 2y^2 + 3y - 1$$

$$5a. 16s^3 - 24s = 8s(2s^2 - 3)$$

$$5b. 15y^3z^3 + 27y^2z^4 - 36yz^5 = 3yz^3(5y^2 + 9yz - 12z^2)$$

$$6a. 20 + 5w + 12n + 3wn = 5(4 + w) + 3n(4 + w) = (4 + w)(5 + 3n) = (w + 4)(3n + 5)$$

$$6b. 8 + 9y^4 - 6y^3 - 12y = (9y^4 - 6y^3) + (-12y + 8) = 3y^3(3y - 2) - 4(3y - 2) = (3y - 2)(3y^3 - 4)$$

$$7a. r^2 - 2r - 35 = (r - 7)(r + 5)$$

$$7b. z^2 + 13zw + 40w^2 = (z + 8w)(z + 5w)$$

$$7c. 18c^2 - 98d^2 = 2(9c^2 - 49d^2) = 2(3c - 7d)(3c + 7d)$$

$$7d. 8v^3 - 125 = (2v)^3 - 5^3 = (2v - 5)[(2v)^2 + (2v)(5) + 5^2] = (2v - 5)(4v^2 + 10v + 25)$$

$$7e. x^2 - 4p^2 - 4pq - q^2 = x^2 - (4p^2 + 4pq + q^2) = x^2 - (2p + q)^2 = [x - (2p + q)][x + (2p + q)] = (x - 2p - q)(x + 2p + q)$$

$$8a. 2y^2 = 5y + 7 \Rightarrow 2y^2 - 5y - 7 = 0 \Rightarrow (2y - 7)(y + 1) = 0 \Rightarrow 2y - 7 = 0 \text{ or } y + 1 = 0 \Rightarrow y = 7/2, -1$$

$$8b. 2x^3 - x^2 = 28x \Rightarrow 2x^3 - x^2 - 28x = 0 \Rightarrow x(2x^2 - x - 28) = 0 \Rightarrow x(2x + 7)(x - 4) = 0 \Rightarrow x = 0, -7/2, 4$$