

**Polynomial Operations****Find each product.**

1)  $3(5x - 2)$

$15x - 6$

2)  $3n(3n - 2)$

$9n^2 - 6n$

3)  $(2n - 3)(-4n - 2)$

$-8n^2 + 8n + 6$

4)  $(-5k + 4)(8k - 2)$

$-40k^2 + 42k - 8$

5)  $(-2n + 6)(4n^2 - 8n - 8)$

$-8n^3 + 40n^2 - 32n - 48$

6)  $(3x^2 + 2x - 3)(7x^2 - 2x + 8)$

$21x^4 + 8x^3 - x^2 + 22x - 24$

**Divide.**

7)  $(v^3 - 5v^2 - 12v + 1) \div (v + 1)$

$v^2 - 6v - 6 + \frac{7}{v + 1}$

8)  $(x^3 + 3x^2 - 29x + 6) \div (x - 4)$

$x^2 + 7x - 1 + \frac{2}{x - 4}$

9)  $(6x^4 + 44x^3 + 20x^2 + 38x - 28) \div (x + 7)$

$6x^3 + 2x^2 + 6x - 4$

10)  $(6r^4 - 28r^3 + 19r^2 - 9r - 12) \div (r - 4)$

$6r^3 - 4r^2 + 3r + 3$

$$11) (4x^4 + 11x^3 - 24x^2 + 13x - 5) \div (4x - 5)$$

$$x^3 + 4x^2 - x + 2 + \frac{5}{4x - 5}$$

**Simplify each expression.**

$$12) (2x - 5x^2) + (2x^2 + 2)$$

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

$$13) (2m^2 - 3m^4) - (5m^4 - 5m^2)$$

$$-8m^4 + 7m^2$$

$$14) (v^4 + 12v^2 - 9v^3) + (7 + 6v^2 + 14v^3)$$

$$v^4 + 5v^3 + 18v^2 + 7$$

$$15) (-9p^3 + 9 - 10p^5) - (14p^5 + 6p^3 + p^2)$$

$$-24p^5 - 15p^3 - p^2 + 9$$

$$16) (4x^4 - 11x^2y^4) - (5x^4 + 3x^2y^4 - x^4y^2) - (-2x^4 + 11x^2y^4)$$

$$-25x^2y^4 + x^4y^2 + x^4$$

$$17) (-4x^4 - 4xy) + (-8xy + 5x^4 - 11x^2y^4) - (-8x^4 + 9x^2y^4)$$

$$-20x^2y^4 + 9x^4 - 12xy$$