

Special Products and Factoring

Factoring

Common Monomial Factors

Practice (p. 274)

- 1 (3) $x + 1$
- 2 (2) $3x(2x^2 - 3x - 4)$
- 3 (3) $5abc(a - b - 1)$
- 4 (1) $27x^3 - 6x^2 + 15x = x(27x^2 - 6x + 15)$
- 5 $5(a - b)$
- 6 $2(x + 3y)$
- 7 $a(x + b)$
- 8 $g(d - r)$
- 9 $a(r^2 + 5)$
- 10 $5xy(2x + 3y)$
- 11 $(a + 9)(a - 7)$
- 12 $(x^2 + 7)(x + 2)$
- 13 $10x^3y^5(3x^2 - 2y^4 + 1)$
- 14 $(y + 2)(y - 1)$
- 15 $2rt(4a - 3b + 5c)$

Factoring the Difference of Two Squares

Practice (p. 275)

- 1 (4) $(xy + 10)(xy - 10)$
- 2 (3) $\left(\frac{3}{4}y + 6\right)\left(\frac{3}{4}y - 6\right)$
- 3 $4a^6 - 9b^{10} = (2a^3 + 3b^5)(2a^3 - 3b^5)$
- 4 (4) $x^2y^2 - z^2 = (x^2y + 1)(x^2y - 1)$
- 5 $4m^2 - 4n^2$
- 6 $0.04x^2 - y^2$
- 7 $x^4 - y^4$
- 8 $a^4 - b^6$
- 9 $k^2 - 25$
- 10 $16h^2 - 9$
- 11 $\frac{9}{12}p^2 - \frac{4}{9}q^2$

- 12 $24 - 9d^2$
- 13 $25f^2 - 4g^2$
- 14 $\frac{9s^8}{t^4} - 36$
- 15 $(a - 7)(a + 7)$
- 16 $(m - 8)(m + 8)$
- 17 $(7x - y)(7x + y)$
- 18 $(6 + x)(6 - x)$
- 19 $(4x + 1)(4x - 1)$
- 20 $(r + s)(r - s)$
- 21 $(x + y^2)(x - y^2)$
- 22 $(a + 2b)(a - 2b)$
- 23 $(3a + 4y)(3a - 4y)$
- 24 $(9x^2 + 4y^4)(3x + 2y^2)(3x - 2y^2)$
- 25 $(7 + 2m)(7 - 2m)$
- 26 $(5a + 9b)(5a - 9b)$
- 27 $(y + cd)(y - cd)$
- 28 $(st + kn)(st - kn)$
- 29 $(x^2 + 0.04)(x - 0.2)(x + 0.2)$
- 30 $(9 + x^2)(3 + x)(3 - x)$

Multiplying Binomials

Practice (p. 272)

- 1 $x^2 + 6x + 9$
- 2 $a^2 + 8a + 15$
- 3 $t^2 + 2t + 1$
- 4 $k^2 + 15k + 63$
- 5 $z^2 + 16z + 64$
- 6 $n^2 - 5n + 4$
- 7 $y^2 - 9y + 14$
- 8 $j^2 - 6j + 9$
- 9 $h^2 - 16h + 64$
- 10 $b^2 - 17b + 72$
- 11 $q^2 - 3q - 10$
- 12 $w^2 - w - 42$

- 13 $r^2 + 8r - 20$
- 14 $d^2 - 5d - 24$
- 15 $g^2 - g - 30$
- 16 $k^2 - 2k - 24$
- 17 $2v^2 - 5v + 3$
- 18 $6m^2 + 24m + 18$
- 19 $20x^2 + 17x + 3$
- 20 $49n^2 - 9$
- 21 $24d^2 + 2d - 2$
- 22 $14y^2 + 50y - 24$
- 23 $w^2 + 5wz + 6z^2$
- 24 $2s^2 - 15st + 27t^2$
- 25 $15q^2 + 7qr - 6r^2$

Factoring Trinomials

Practice (p. 281)

- 1 (3) $4x^2 - 4x + 1$
- 2 (2) $(7x - 5)(x + 2)$
- 3 (3) $(2x - 3)(x + 1)$
- 4 (4) none of the above
- 5 $(x - 5)^2$
- 6 $(x - 3)(x - 4)$
- 7 $(x + 4)(x - 2)$
- 8 $(x - 10)(x + 2)$
- 9 $(11x + 1)(x + 1)$
- 10 $(11x - 1)(x - 1)$
- 11 $\left(x - \frac{5}{2}\right)^2$
- 12 $(3y + 2)(y - 2)$
- 13 $(x + 1)^2$
- 14 $(x + 2)(x + 1)$
- 15 $(2x - 5)^2$
- 16 $2x^2 + 5x + 6 \rightarrow$ prime
- 17 $(4x + 5)^2$
- 18 $(a^2 + b^2)^2$
- 19 $(6x - 5)(x - 1)$
- 20 $(x - 3)(4x - 27)$

Factoring Completely

Practice (p. 282)

- 1 (2) Find common monomial factors.
- 2 (1) $2(x + 6y)(x - 6y)$
- 3 (2) $2(x - 5)(x + 1)$
- 4 (3) $x(x - 4)^2$
- 5 $5(x + 2)(x - 2)$
- 6 $a(b^2 + x^2)(b + x)(b - x)$

- 7 $3(x + 2)^2$
- 8 $9x(x + 1)(x - 1)$
- 9 $3(x + 5)(x - 5)$
- 10 $6a^2(1 + a)(1 - a)$
- 11 $x(x - 2)(x + 1)$
- 12 $a(a + 1)(a - 1)$
- 13 $x(1 + 5x)(1 - 5x)$
- 14 $ax(x + 6)(x - 6)$
- 15 $25(x + 2y)(x - 2y)$
- 16 $2(a^2 + 4b^2)(a + 2b)(a - 2b)$
- 17 $9(x + y)^2$
- 18 $5(x - 3)(x - 2)$
- 19 $a(1 + r)(1 - r)$
- 20 $(x + 2)(x + 3)(x - 3)$

Chapter Review (p. 283)

- 1 (2) $x - 4$
- 2 $3x^2 - 12x$
- 3 $-8j^2 + 20j$
- 4 $9 - d^2$
- 5 $m^2 - 64$
- 6 $g^3 + 4g^2 - 4g - 16$
- 7 $x^2 + 14x + 49$
- 8 $s^2 - 2s + 1$
- 9 $y^2 - 5y + 6$
- 10 $t^2 + t - 56$
- 11 $2j^2 + 9j + 4$
- 12 $6r^2 + 5r - 25$
- 13 $12x^2 - 8x^3$
- 14 $-x^2 + 3x + 4$
- 15 $m^2 + 15m + 56$
- 16 $3x(x - 3)$
- 17 $2abc^2(bc - 4)$
- 18 $(s + 3)(s - 3)$
- 19 $(v - 4c)(v + 4c)$
- 20 $a^2 + b^2$
- 21 $(d - 9)(d + 9)$
- 22 $(k + 3)(k + 2)$
- 23 $(m - 4)(m - 10)$
- 24 $(3 - x)(5 + x)$
- 25 $x^2 - 14x + 9$
- 26 $2(x + 5)(x + 7)$
- 27 $3a(x - 8)(x - 2)$
- 28 $-(x + 4)(x - 7)$
- 29 $(a^2 + b^2)(a^2 - b^2)$
- 30 $3(r + 2s)(r - 2s)$