

Factoring Practice

Completely factor the following.

$$\begin{array}{l}
 1. \quad 2 - 8x^2 \\
 2(1 - 4x^2) \\
 2(1 - 2x)(1 + 2x)
 \end{array}
 \left.
 \begin{array}{l}
 \text{or} \\
 -2(4x^2 - 1) \\
 -2(2x+1)(2x-1)
 \end{array}
 \right\}$$

$$\begin{array}{l}
 3. \quad 4x^2 - 8x + 32 \\
 4(x^2 - 2x + 8)
 \end{array}$$

$$\begin{array}{l}
 5. \quad 3x^2 - 12x - 36 \\
 3(x^2 - 4x - 12) \\
 3(x - 6)(x + 2)
 \end{array}$$

$$\begin{array}{l}
 7. \quad 6x^2 + 8x + 2 \\
 2(3x^2 + 4x + 1) \\
 2(3x + 1)(x + 1)
 \end{array}$$

$$\begin{array}{l}
 9. \quad x^7 - x^5 \\
 x^5(x^2 - 1) \\
 x^5(x + 1)(x - 1)
 \end{array}$$

$$\begin{array}{l}
 11. \quad 4x^2 - 16x + 15 \\
 \begin{array}{ccc}
 60 & & \\
 -6 & \times & -10 \\
 -10 & &
 \end{array} \\
 (2x - 3)(2x - 5) \\
 \begin{array}{c}
 \text{---} \\
 -60x \\
 \text{---} \\
 -10x
 \end{array}
 \end{array}$$

$$\begin{array}{l}
 13. \quad x^3 + 2x^2 - x - 2 \\
 x^2(x + 2) - 1(x + 2) \\
 (x + 2)(x^2 - 1) \\
 (x + 2)(x + 1)(x - 1)
 \end{array}$$

$$\begin{array}{l}
 15. \quad x^4 - x^3 + x - 1 \\
 x^3(x - 1) + 1(x - 1) \\
 (x - 1)(x^3 + 1) \\
 (x - 1)(x + 1)(x^2 - x + 1)
 \end{array}$$

$$\begin{array}{l}
 2. \quad x^2 + 5x + 4 \\
 (x + 1)(x + 4)
 \end{array}$$

$$\begin{array}{l}
 4. \quad x^2 + 12x + 60 \\
 \text{prime}
 \end{array}$$

1. 60
6. 10
2. 30
4. 15

$$\begin{array}{l}
 6. \quad 3y^3 - 18y^2 - 48y \\
 3y(y^2 - 6y - 16) \\
 3y(y - 8)(y + 2)
 \end{array}$$

$$\begin{array}{l}
 8. \quad x^4 - 1 = (x^2 + 1)(x^2 - 1) \\
 (x^2 + 1)(x + 1)(x - 1)
 \end{array}$$

$$\begin{array}{l}
 10. \quad 9x^2 - 24x + 16 \\
 (3x - 4)(3x - 4) \\
 (3x - 4)^2
 \end{array}$$

Perfect Square Trinomial

$$\begin{array}{l}
 12. \quad 4 - 14x^2 - 8x^4 \\
 -2(4x^4 + 7x^2 - 2) \\
 -2(4x - 1)(x + 2)
 \end{array}$$

$$\begin{array}{l}
 14. \quad x^3 - 3x^2 - x + 3 \\
 x^2(x - 3) - 1(x - 3) \\
 (x - 3)(x^2 - 1) \\
 (x - 3)(x + 1)(x - 1)
 \end{array}$$

$$\begin{array}{l}
 16. \quad x^4 + x^3 + x + 1 \\
 x^3(x + 1) + 1(x + 1) \\
 (x + 1)(x^3 + 1) \\
 (x + 1)(x + 1)(x^2 - x + 1) \\
 (x + 1)^2(x^2 - x + 1) \rightarrow
 \end{array}$$

$$17. x^3 - 1$$

$$(x-1)(x^2+x+1)$$

$$18. x^3 + 8$$

$$(x+2)(x^2-2x+4)$$

$$19. 64x^3 - 27$$

$$(4x-3)(16x^2+12x+9)$$

$$20. 125 + 8x^3$$

$$8x^3 + 125$$
$$(2x+5)(4x^2-10x+25)$$

$$21. 6x^3 + 15x^2 - 9x$$

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

$$3x(2x-1)(x+3)$$

$$22. 50x - 8x^3$$

$$-2x(4x^2 - 25)$$

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