

Practice Exercises

Factor the following polynomials completely.

1. $3x + 6$

2. $12x^4 + 8x^3y + 4x^2y^2$

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

4. $6y^3z + 7y^2z^2 + 2yz^3$

5. $6x^3 - 8x^2y^2 + 4x^2z$

Problem Set

Factor the following polynomials completely.

1. $15xy + 6y$
2. $18x^3 + 8x^4y + 14x^2y^3$
3. $6x^4 - 15x^2 + 18xy$
4. $12y^3z + 15y^2z^2 + 3yz^4$
5. $12x^4 - 6x^3y^4 + 9x^3z^2$
6. $4x^6 - 10x^4y^6 + 8x^4z^5$
7. $8x^3y^3 + 28x^2y^7 + 12x^2y^3z^3$
8. $15x^6y + 40x^3y^3 - 25x^3yz^4$
9. $12x^3y^3 - 54xy^7 - 24xy^3z^6$
10. $21x^6y^2 + 56x^3y^4 - 21x^3y^2z^4$

Problem Set

Factor the following polynomials completely.

$$\begin{aligned} 1. \quad & 15xy + 6y \\ &= 3y(5x + 2) \end{aligned}$$

$$\begin{aligned} 2. \quad & 18x^3 + 8x^4y + 14x^2y^3 \\ &= 2x^2(4x^2y + 9x + 7y^3) \end{aligned}$$

$$\begin{aligned} 3. \quad & 6x^4 - 15x^2 + 18xy \\ &= 3x(2x^3 - 5x + 6y) \end{aligned}$$

$$\begin{aligned} 4. \quad & 12y^3z + 15y^2z^2 + 3yz^4 \\ &= 3yz(4y^2 + 5yz + z^3) \end{aligned}$$

$$\begin{aligned} 5. \quad & 12x^4 - 6x^3y^4 + 9x^3z^2 \\ &= 3x^3(4x - 2y^4 + 3z^2) \end{aligned}$$

$$\begin{aligned} 6. \quad & 4x^6 - 10x^4y^6 + 8x^4z^5 \\ &= 2x^4(2x^2 - 5y^6 + 4z^5) \end{aligned}$$

$$\begin{aligned} 7. \quad & 8x^3y^3 + 28x^2y^7 + 12x^2y^3z^3 \\ &= 4x^2y^3(2x + 7y^4 + 3z^3) \end{aligned}$$

$$\begin{aligned} 8. \quad & 15x^6y + 40x^3y^3 - 25x^3yz^4 \\ &= 5x^3y(3x^3 + 8y^2 - 5z^4) \end{aligned}$$

$$\begin{aligned} 9. \quad & 12x^3y^3 - 54xy^7 - 24xy^3z^6 \\ &= 6xy^3(2x^2 - 9y^4 - 4z^6) \end{aligned}$$

$$\begin{aligned} 10. \quad & 21x^6y^2 + 56x^3y^4 - 21x^3y^2z^4 \\ &= 7x^3y^2(3x^3 + 8y^2 - 3z^4) \end{aligned}$$