3-4 Additional Practice

Dividing Polynomials

Divide using long division.

1. $(x^2 - 13x - 48) \div (x + 3)$

2. $(x^3 + 5x^2 - 3x - 1) \div (x - 1)$

3. $(3x^3 - x^2 - 7x + 6) \div (x + 2)$

Divide using synthetic division.

4. $(x^3 - 8x^2 + 17x - 10) \div (x - 5)$

5. $(x^3 + 5x^2 - x - 9) \div (x + 2)$

6. $(2x^4 + 7x^3 - 11x^2 + 21x + 5) \div (x + 5)$

7. Verify the Remainder Theorem if $P(x) = x^3 - 5x^2 - 7x + 25$ is divided by $(x - 5)$. Explain.

Determine whether each binomial is a factor of $x^3 + 3x^2 - 10x - 24$.

8. $x + 4$

9. $x - 3$

10. $x + 6$

11. The volume, in cubic inches, of a rectangular box can be expressed as the product of its three dimensions: $V(x) = x^3 - 16x^2 + 79x - 120$. The length is $x - 8$. Find linear expressions with integer coefficients for the width and height. The width is greater than the height.

12. What does it mean if $P(-4)$ for the polynomial function $P(x) = x^3 + 11x^2 + 34x + 24$ equals zero?