4-3

Practice

The Remainder and Factor Theorems

Divide using synthetic division.

1. $(3x^2 + 4x - 12) \div (x + 5)$

2. $(x^2 - 5x - 12) \div (x - 3)$

3. $(x^4 - 3x^2 + 12) \div (x + 1)$

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

Use the Remainder Theorem to find the remainder for each division. State whether the binomial is a factor of the polynomial.

5. $(2x^4 + 4x^3 - x^2 + 9) \div (x + 1)$

6. $(2x^3 - 3x^2 - 10x + 3) \div (x - 3)$

7. $(3t^3 - 10t^2 + t - 5) \div (t - 4)$

8. $(10x^3 - 11x^2 - 47x + 30) \div (x + 2)$

9. $(x^4 + 5x^3 - 14x^2) \div (x - 2)$

10. $(2x^4 + 14x^3 - 2x^2 - 14x) \div (x + 7)$

11. $(y^3 + y^2 - 10) \div (y + 3)$

12. $(n^4 - n^3 - 10n^2 + 4n + 24) \div (n + 2)$

13. Use synthetic division to find all the factors of $x^3 + 6x^2 - 9x - 54$ if one of the factors is $x - 3$.

14. ***Manufacturing*** A cylindrical chemical storage tank must have a height 4 meters greater than the radius of the top of the tank. Determine the radius of the top and the height of the tank if the tank must have a volume of 15.71 cubic meters.