

Problems 1-5: Divide using synthetic division. Show all work then circle your answers.

1. $(x^3 - 3x^2 - 5x + 8) \div (x + 3)$

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

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

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

5. $(x^3 - 5x^2 + 2x - 7) \div (x + 2)$

Determine if the given binomial is a factor of the polynomial $P(x)$. Show all of your work using synthetic division and then state whether the binomial is a factor using a complete sentence explaining how you reached your conclusion.

7. $6x^3 + 7x^2 + 23x - 30$; $x + 3$

Problems 8-10: Use synthetic substitution to evaluate the polynomial for the given value.

8. $P(x) = 2x^3 - 5x^2 + 7x - 3$ for $x = 4$

9. $P(x) = 4x^3 - 7x^2 + 2x + 3$ for $x = -3$

10. $P(x) = x^3 - x^2 + 4$ for $x = -2$

11. If the remainder of the polynomial division is 0, what does it mean?