

Precalculus Prerequisites Section 0.5 Exercises

1. Perform the indicated operations and simplify

(a) $(4 - 3x^2 - 2x^3) - \frac{1}{2}(2x - 8x^2)$

(b) $(3a^2 - 5)(-12a^3 + 2a - 6)$

(c) $(t - \sqrt[3]{2})(t + \sqrt[3]{2}t + \sqrt[3]{4})$

(d) $(x - (3 + \sqrt{2}))(x - (3 - \sqrt{2}))$

2. Perform the indicated division. Write your answer in the form

$$\frac{\text{dividend}}{\text{divisor}} = \text{quotient} + \frac{\text{remainder}}{\text{divisor}}.$$

Remember that you can check your answer by showing

$$\text{dividend} = (\text{divisor})(\text{quotient}) + \text{remainder}$$

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

(b) $(4y^4 + 3y^2 - 1) \div (2y^2 - y - 1)$

(c) $(t^3 - 1) \div (t^2 - 3t + 1)$

3. Verify the given formula by showing that the left hand side of the equation simplifies to the right hand side of the equation.

(a) Difference of Cubes: $(a - b)(a^2 + ab + b^2) = a^3 - b^3$