

Lesson #11-3: Understanding Dividing Polynomials and Dividing Polynomials Using Long Division
(Reference: Lesson #38 in book)**Problem**

1. **Divide each of the following polynomials by each monomial. Express your final answer in standard form.**

$$1. \left(-36x^5y^8z^3 + 96x^9y^5z^7 - 120x^7y^3z^2 \right) \div \left(-12x^4y^3z^2 \right)$$

$$2. \frac{14a^3b^3c^7 - 70a^5b^8c^{12} + 7a^3bc^7}{14a^4b^6c^5}$$

3. **Divide each of the following polynomials by each binomial.**

$$3. \frac{81x^8y^5 - 100x^6y^7}{9x - 10y}$$

$$4. \left(72x^3y^2 - 96x^2y^3 + 32xy^4 \right) \div (3x - 2y)$$

$$5. \frac{128x^9y^7z^3 - 250x^{12}y^7}{x^6y^7(16z^2 + 20xz + 25x^2)}$$

$$6. \frac{81x^3yz^2 - 27x^3z^2 + 27x^2yz^2 - 9x^2z^2}{9xz(3x + 1)}$$

$$7. \left(3x^3y^3z^3 - 4x^2y^3z^3 + 20xy^2z^3 - 15x^2y^2z^3 \right) \div (3x - 4)(xy - 5)$$

8. **Divide each of the following polynomials using the long division method.**

$$8. \left(3x^4 + 11x^3 - 55x^2 + 113x + 79 \right) \div (x + 7)$$

$$9. \left(2x^3 + 7x^2 + 2x + 9 \right) \div (2x + 3)$$

$$10. \left(3x^4 + 2x^3 + x^2 - 4x + 1 \right) \div \left(x^2 + x + 1 \right)$$

$$11. \frac{27x^3 + 64}{3x + 4}$$

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12. $\frac{3x^4 + 2x^3 + x + 2}{x^2 + 4}$