

Lesson #11 B: Understanding Dividing Polynomials and Dividing Polynomials Using Long Division and Synthetic Division
(Reference: Lesson #38 & #51 in book)**Problem**

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

1.
$$\frac{16y^5z^4 - 8y^2z^2 + 12yz^3}{-4y^2z^2}$$

2.
$$\left(-32x^5yz^4 + 80x^3yz^7 - 8xy^3\right) \div \left(-16x^2yz\right)$$

3.
$$\frac{60a^4b^3c^3 - 30a^5b^2c^7 + 100a^3b}{-5a^4bc^3}$$

4. Divide each of the following polynomials by each binomial.

4.
$$\frac{2x^2y^3 - 8xy^4 - 154y^5}{x - 11y}$$

5.
$$\frac{64x^4y^4 - 48x^3y^5 + 9x^2y^6}{x(8x - 3y)}$$

6.
$$\frac{9x^3y^6 + 18x^3y^5z + 12x^3y^5 + 24x^3y^4z}{(3y + 4)(y + 2z)}$$

7.
$$\frac{90x^3y^3z^8 - 6x^2y^4z^9 - 12xy^5z^{10}}{6xy^3z^8(5x - 2yz)}$$

8.
$$\frac{24x^9y^{11}z^7 - 192x^6y^{11}z^{10}}{3x^3y^5z^5(4x^2 + 8xz + 16z^2)}$$

9. Divide each of the following polynomials using the long division or Synthetic Division methods.

9.
$$\left(x^3 - 7x^2 - 4x + 28\right) \div (x - 2)$$

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

Name: _____

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

12. $(2x^4 - 9x^3 + 21x^2 - 26x + 12) \div (2x - 3)$

13. $(3x^4 + 4x^3 - 13x^2 + 9x + 3) \div (3x - 2)$

14. $(4x^3 + 24x^2 - 20) \div (4x + 4)$

15. $(3x^4 + 2x^3 + x + 2) \div (x^2 + 4)$