

<b>POLYNOMIAL DIVISION</b>
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**Directions:** Use long division to divide.

1.)  $(4x^3 - 7x^2 - 11x + 5) \div (4x + 5)$

2.)  $(6x^3 - 16x^2 + 17x - 6) \div (3x - 2)$

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

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

**Directions:** Use synthetic division to divide.

5.)  $(3x^3 - 17x^2 + 15x - 25) \div (x - 5)$

6.)  $(-x^3 + 75x - 250) \div (x + 10)$

7.)  $(9x^3 - 16x - 18x^2 + 32) \div (x - 2)$

8.)  $(5x^3 + 6x + 8) \div (x + 2)$

**Directions:** Use the *Remainder Theorem* to evaluate each function.

9.)  $f(x) = 4x^3 - 13x + 10$

10.)  $g(x) = x^6 - 4x^4 + 3x^2 + 2$

$f(-2) = \underline{\hspace{2cm}}$

$g(2) = \underline{\hspace{2cm}}$

**Directions:** Verify the given factor(s) of the function  $f(x)$ . State the complete factorization, zeros and  $x$ -intercept(s).

9.)  $f(x) = 2x^3 + x^2 - 5x + 2$       Factor:  $(x + 2)$       Factors: \_\_\_\_\_  
Zeros: \_\_\_\_\_  
 $x$ -int: \_\_\_\_\_

10.)  $f(x) = x^3 + 2x^2 + 9x + 18$       Factor:  $(x + 2)$       Factors: \_\_\_\_\_  
Zeros: \_\_\_\_\_  
 $x$ -int: \_\_\_\_\_

11.)  $f(x) = x^4 - 4x^3 - 15x^2 + 58x - 40$       Factors:  $(x - 5)(x + 4)$       Factors: \_\_\_\_\_  
Zeros: \_\_\_\_\_  
 $x$ -int: \_\_\_\_\_

12.)  $f(x) = x^4 - 6x^3 + 13x^2 - 24x + 36$       Factors:  $(x - 3)^2$       Factors: \_\_\_\_\_  
Zeros: \_\_\_\_\_  
 $x$ -int: \_\_\_\_\_