

# HOMWORK: POLYNOMIAL DIVISION

NAME: \_\_\_\_\_ DAY 7 DUE: \_\_\_\_\_

Algebra 2 HW

5.5 Synthetic Division, Factors, & Zeros

Name \_\_\_\_\_

Date \_\_\_\_\_

Part I. Perform synthetic division (SD). Write the answer completely.

$(x^2 + 7x + 12) \div (x + 4)$	$(x^3 - 3x^2 + 8x - 5) \div (x - 1)$
$(x^4 - 7x^2 + 9x - 10) \div (x - 2)$	$(2x^4 - x^3 + 4) \div (x + 1)$

Part II. Get the k-value from the factor. Use SD & factor  $f(x)$  completely.

$f(x) = x^3 - 3x^2 - 16x - 12; x - 6$	$f(x) = x^3 - 18x^2 + 95x - 126; x - 9$
$f(x) = x^3 - x^2 - 21x + 45; x + 5$	$f(x) = 3x^3 - 16x^2 - 103x + 36; x + 4$

**Part III.** Use Synthetic Division and factor the result. Then get the zeros from factors.  
One zero is already provided.

$f(x) = x^3 + 2x^2 - 20x + 24; -6$	$f(x) = x^3 - 9x^2 - 5x + 45; 9$
$f(x) = 2x^3 + 3x^2 - 39x - 20; 4$	$f(x) = x^3 - 3x^2 - 45x + 175; -7$

**One zero of  $f(x) = x^3 + x^2 + 2x + 24$  is  $-3$ . Find all the zeros.**

1. **Synthetic Division** - because  $f(-3) = 0$ ,  $x = -3$  is a zero, and also  $x + 3$  is a factor

2. Write as a product of 2 factors:

3. Then completely factor:

$$f(x) = ( \quad ) ( \quad ) ( \quad )$$

4. Graph!

