

Name \_\_\_\_\_ Synthetic Division

Long Division- finds if it is a factor

Synthetic Division- finds if it is a zero

$$x-1 \overline{) x^2 + 5x - 6}$$

$$1 \left| \begin{array}{ccc} 1 & 5 & -6 \\ & & \end{array} \right.$$

1. Use synthetic division to decide if 2 or -4 are zeros of  $x^3 - 5x^2 - 18x + 72$ .

2. Use synthetic division to decide if 5 or 2 is a zero of  $2x^3 + 9x^2 - 8x - 15$ . Then find the remaining zeros using long division.

**Practice**

1. Use synthetic division to decide if 4 is a factor of  $2x^3 - 3x^2 - 18x - 8$ .

2. Use synthetic division to simplify  $\frac{x^3 - 4x^2 + 6x - 4}{x - 2}$ .

3. Use synthetic division to divide  $x^2 + 3x + 5$  by  $x + 1$ .

4. Complete using synthetic division.  $x - 5 \overline{) 3x^3 - 17x^2 + 15x - 25}$

5. Prove using synthetic division whether  $-4$  is a zero of  $x^3 - 13x + 12$ .

6. Use synthetic and/or long division to find all the zeros of  $x^3 - 5x^2 + 8x - 4$  if  $f(1) = 0$  then graph the polynomial.