The real number r is a **real zero** of a polynomial function f if f(r) = \_\_\_\_\_ and (r, 0) is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Also, (x – r) is a **factor** of f.

**Long Division**:  

 OR 

**Remainder Theorem**:
When dividing a function f(x) by (x – c), the remainder R = f(c).

Find the remainder when  is divided by x – 1; x + 2.

**Factor Theorem**:
(x – c) is a factor of f(x) iff f(c) = 0.

Find whether  has the factor x – 1; x + 2.

**Rational Zeros Theorem (p/q)**

List the potential rational zeros of 

 

Find all of the real zeros of 

 

 

 

 

Then write each polynomial above in factored form.

**Intermediate Value Theorem**

If a < b and f(a) and f(b) are of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sign, then there is at least one zero of f between a and b.

Show that f(x) = 3x3 – 10x + 9 has a zero in the interval [-3, -2]. Find it to 2 decimal places.

Show that f(x) = x4 + 8x3 – x2 + 2 has a zero in the interval [-1, 0]. Find it to 2 decimal places.