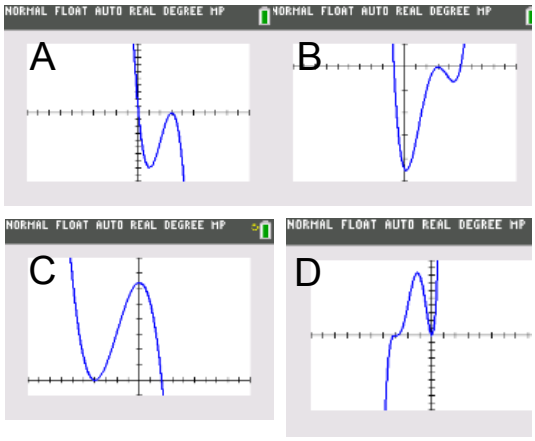
Quiz Review 2.3 to 2.5

1. For each of the following be able to...
   a. write the roots & identify any multiplicities
   b. determine the degree
   c. determine if the leading coefficient is +/-
   d. match the graph



$f(x) = (x-3)^2(x+1)(x-5)$

$g(x) = -2x(x-3)^2$

$h(x) = x^2(x+2)^3$

$j(x) = -2(x-2)(x+4)^2$

2. Use synthetic division to find a quotient and remainder when f(x) is divided by d(x).

$f(x) = x^3 - 5x^2 + 3x - 2$
$d(x) = x + 1$

3. Use long division to find a quotient and remainder when f(x) is divided by d(x).

$f(x) = x^4 - 3x^3 + 6x^2 - 3x + 5$ $\quad$ $d(x) = x^2 + 1$

4. Given $f(x) = 3x^3 + 4x^2 - 5x - 2$, determine which of the following are factors of f(x).
   a. x + 4
   b. x - 1
   c. 3x + 1
   d. 2x - 5

5. Use the Rational Zeros Theorem to write list of potential rational zeros.

$f(x) = 3x^4 - 2x^3 - 4x^2 - 5x - 9$

6. Given $f(-3) = 0$, find all remaining zeros of $f(x) = x^3 + x^2 - 8x - 6$

7. Given *3i* is a zero of $f(x) = 3x^4 - 14x^3 + 22x^2 - 126x - 45$, find all remaining zeros.

8. Determine the end behavior of the following functions

$f(x) = -17x^4 - 3x^3 + 6x^2 + 10x + 4$ $g(x) = 2x^5 + 3x^4 - 10x^3 + 4$

9. Determine a polynomial of minimum degree with real coefficients that has roots -¾, 2 and 2 + 3i and a leading coefficient of 8. Leave it as a linear factorization c function.