Chapter 5 Practice Test

1) $f(x) = (x-4)^2(2x+6)$

a) List each x-intercept (zero) and its multiplicity (round to 2 decimal places when needed)
b) Determine whether the graph crosses or touches the x-axis at each x-intercept
c) Determine the maximum number of turning points on the graph
d) Sketch a graph and approximate the turning points, also label the x-intercepts
e) Describe the end behavior (find the power function that the graph resembles for large values of $|x|$
f) State the intervals where the function is increasing and decreasing

2) Form a polynomial function of lowest degree with whose x-intercepts are given, that passes through the given point.

x-intercepts: (2,0), (-5,0) multiplicity 2; point (3, 128)

3) $f(x) = 6x^3 - 29x^2 - 17x + 60$

a) use your graphing calculator, or the rational root theorem to find a x-intercept of the polynomial

b) use synthetic division to completely factor the polynomial

c) Use your answer to part a to solve f(x) = 0

4) Create a function with lead coefficient 1 that satisfies the conditions.

degree 2; zeros 5i and -5i

5) $f(x) = \frac{6x-12}{x+1}$

For each problem find the following:

a) the domain of $f(x)$ written in interval notation
b) the equation of the vertical asymptote (write none if there is no vertical asymptote)
c) the equation of the horizontal asymptote (write none if there is no horizontal asymptote)
d) x- intercept(s) if any
e) y-intercept(s) if any

(you do not need to graph the function)

6) $f(x) = \frac{x^2+2x-15}{x-1}$

For each problem find the following:

a) the domain of $f(x)$ written in interval notation

b) the equation of the vertical asymptote (write none if there is no vertical asymptote)

c) the equation of the slant asymptote (write none if there is no slant asymptote)

d) x- intercept(s) if any

e) y-intercept(s) if any

(you do not need to graph the function)