

1.) Given the Polynomial  $f(x) = -2x^4 - x^3 + 3x^2$ , determine the following.

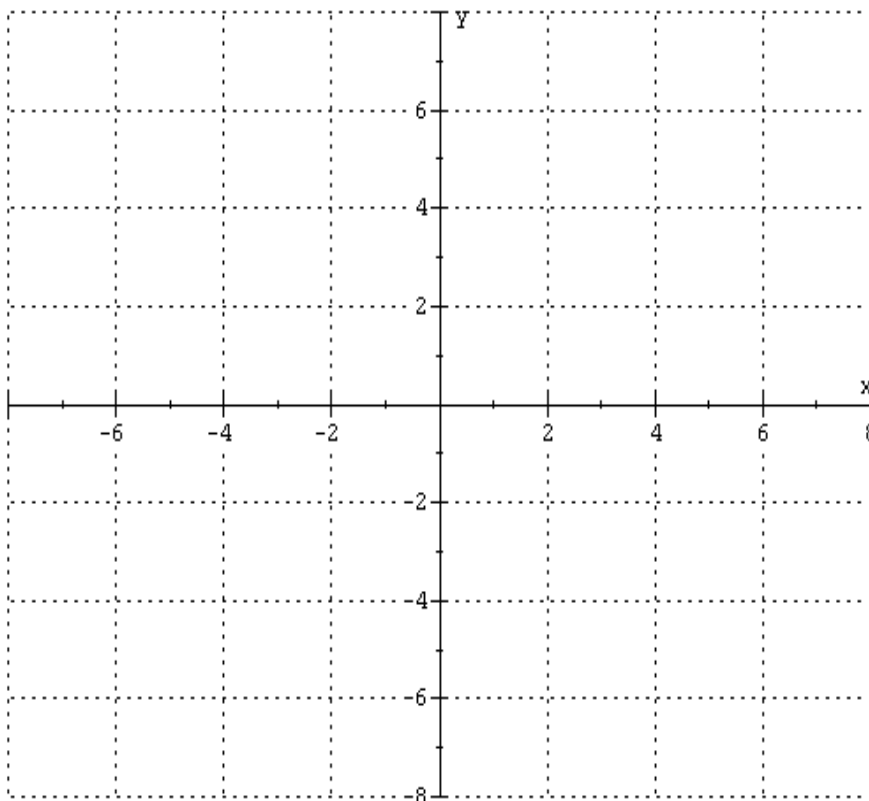
a. Degree.                      b. How many local Max/Min.                      c. How many possible zeros.

d. Even or Odd Function.                      e. Symmetry.                      f. y-intercept.

g. Zeros.                      h. x-intercepts.                      i. Left Hand Behavior.                      j. Right Hand Behavior.

k. Graph

l. One-to-One?



2.) Given the polynomial  $f(x) = 2x^3 - 13x^2 + 26x - 10$

a. List all the possible rational zeros.

b. Use Descartes' rule of signs to construct a sign table for the combinations of signs for the zeros.

c. Determine the zeros.

d. Write  $f(x)$  in factored form with integer coefficients.

3.) Determine the asymptote(s).

$$f(x) = \frac{x^3 - 8}{x^2 + 4}$$

4.)  $R(x) = \frac{x^2 - 3x - 4}{2x^2 + 4x}$ , determine the following:

a. Domain

b. Vertical Asymptote.

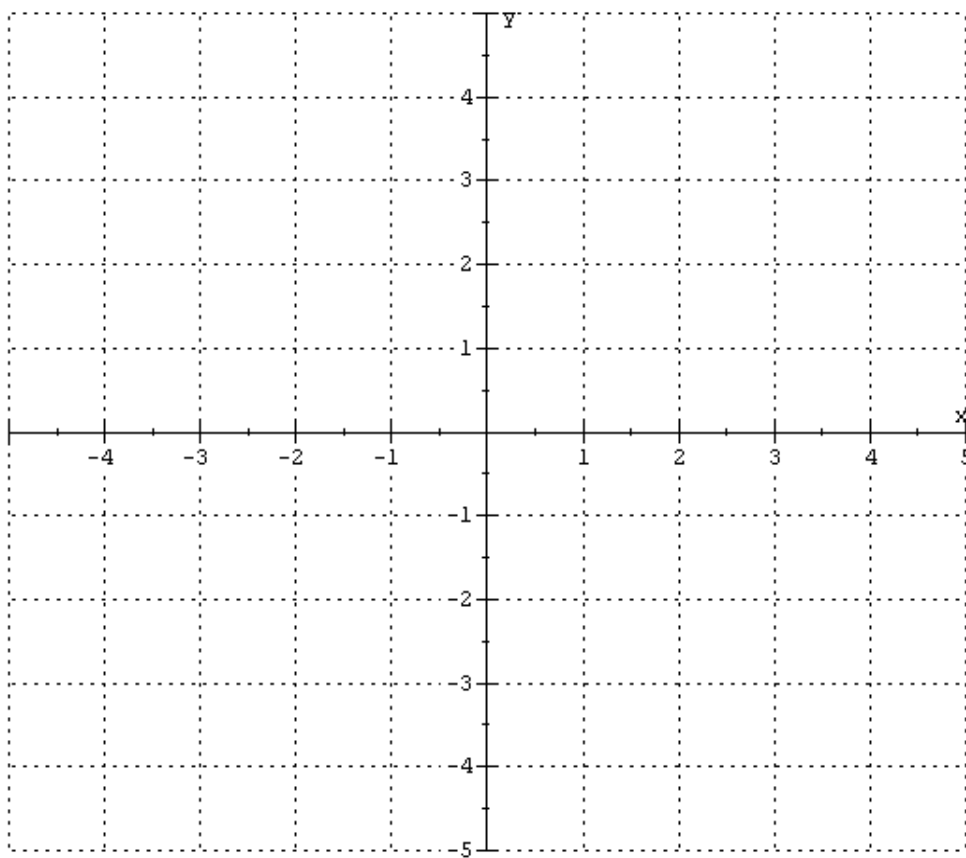
c. Horizontal Asymptote.

d. Zeros.

e. x-intercept(s).

f. y-intercept.

g. Graph with all relevant information.



5.) Find a polynomial  $f(x)$  of degree 4 with zeros of  $2i$ ,  $3$  with multiplicity of 2 and with  $f(1) = -20$ .

Hint: Use  $f(x) = a(x - x_1)(x - x_2)(x - x_3)(x - x_4)$

6.) Show that  $x + 1$  is a factor of  $f(x) = x^{199} - 6x^{100} + 7$