Math 22
Exam 2 -A
October 20, 2010

name _____

1. Identify the vertex; find all *x*- and *y*-intercepts, if any.

$$f(x) = -(x - \tfrac{1}{2})^2 + \tfrac{9}{4}$$

vertex:

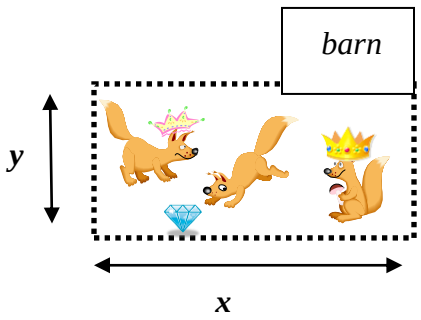
x-intercept(s):	*y-intercept:*

2. A breeder of prize pedigree show-squirrels wants to enclose a rectangular corral next to a 50 foot barn/suite, using the entire barn/suite as one side of the corral. The squirrel breeder has 250 feet of fencing available and will use of all it. Find the dimensions that enclose a maximum area, if no fencing is needed along the barn. *(not drawn to scale)*

Constraint: _____

*Primary:*_____

Solution:



3. Use the Leading Coefficient Test to determine the left and right hand end behavior of the graphs of polynomial functions. Also, determine the ***maximum*** number of zeros or roots, and ***maximum*** number of extrema for each the polynomial functions.

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

Left and right hand end behavior:

maximum number of zeros:

maximum number of extrema:

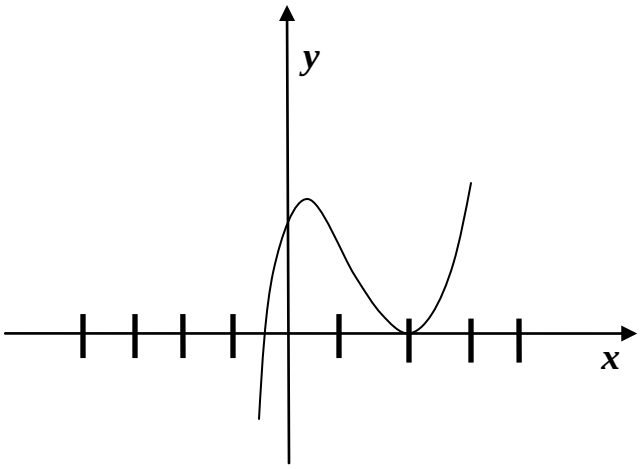
4. Find all ***real*** zeros of the function ***by factoring***: $f(x) = x^4 - 7x^2 - 8$

5. Use ***<u>the remainder theorem</u>*** to evaluate the function, $f(x) = x^4 + 4x^3 - 4x + 1$ at $x = -4$.

6. Use the rational zero test to create a list of all the possible rational zeros of the function,

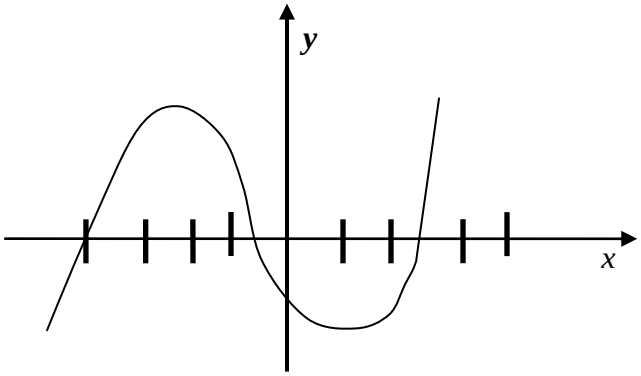
$f(x) = 2x^3 - 4x^2 - 5x + 12$. ***<u>Do not attempt to find the real zeros.</u>***

7. Find all **real** zeros of the function using the graph, synthetic division, factoring and/or the quadratic formula. $f(x) = 2x^3 - 7x^2 + 4x + 4$.



Real Zeros:

8. Find all **real** zeros of the function using the graph, synthetic division, factoring and/or the quadratic formula. $f(x) = x^3 + 2x^2 - 9x - 4$.



Real zeros:

9. Find the <u>*equations*</u> of the vertical asymptote(s), if any, and the equations horizontal asymptote(s), if any, of the graph of the function, $f(x) = \dfrac{2x^2 - x - 3}{x^2 - 4}$ *(no common factors)*

Equations of the
Vertical asymptote(s), if any.

Equations of the
Horizontal asymptote(s), if any.

10. Use long division to find the *equation* of the slant asymptote of the graph of the function,

$$f(x) = \frac{2x^3 - 4x^2 + 3x - 5}{x^2 + 1}.$$

Equation of the
Slant asymptote: