Math 120
Exam #4
Spring '08

Show all work (and answers) on the blank paper provided. Write nothing on this paper other than your name.

Name:

1	10	
2	10	
3	10	
4	10	
5	10	
6	10	
7a	10	
7b	10	
8	10	
9a	10	
9b	10	
10	10	
11	10	
EX	15	
total	130	
curve		
%		

1) The quadratic function $f(x) = -3x^2 - 12x - 1$ represents a parabola. Obtain vertex form, and give the vertex, axis, domain, and range.

2) Divide using synthetic division: $\dfrac{x^3 + x^2 - 11x - 10}{x - 3}$

3) Using synthetic division and appropriate theorems, find all rational zeros of $f(x) = 8x^4 - 14x^3 - 29x^2 - 4x + 3$.

4) For $f(x) = 2x^3 - 9x^2 - 6x + 5$, list all possible rational zeros, find all rational zeros, and factor $f(x)$ into linear factors.

5) Find a polynomial function f of degree 4 with real coefficients such that 3, 1, and $-1 - 3i$ are zeros and $f(2) = -36$.

6) Find a polynomial function f of least degree having only real coefficients and the zeros $1 + i$ and 4 (multiplicity 2).

7) Solve each equation.
  a. $4^{3-y} = 16^y$
  b. $\dfrac{1}{5} = c^{-5}$

8) Find the future value if \$35,000 is invested at 8.9% compounded quarterly for 7 years. (Use the formula $A = P\left(1 + \dfrac{r}{m}\right)^{mt}$).

9) Solve each equation.
  a. $x = \log_6 \dfrac{1}{216}$
  b. $\dfrac{2}{3} = \log_x \sqrt[3]{16}$

10) Rewrite $\log_9 \dfrac{13r^2}{h}$ as an expression consisting of $\log_9 13$, $\log_9 r$, & $\log_9 h$.

11) Rewrite $5\log_5 a - 7\log_5 c^4$ as a single logarithm with coefficient 1.

EXTRA: Graph $f(x) = \dfrac{2x}{x^2 - 1}$ using the step-by-step procedure outlined in either the textbook or the online notes.