

Math 110
Exam 2
Fall 2007

Name: _____

1. Your exam contains 7 questions and 5 pages; Please make sure you have a complete exam.
2. The entire exam is worth 50 points. Point values for problems vary and these are clearly indicated. You have 50 minutes for this exam.
3. Make sure to ALWAYS SHOW YOUR WORK; you will not receive any partial credit unless all work is clearly shown. If in doubt, ask for clarification.
4. If you need extra space, use the back of the page and clearly indicate this.
5. You are allowed one 8.5×11 sheet of handwritten notes (both sides). Graphing and scientific calculators are allowed.

Problem	Total Points	Score
1	12	
2	6	
3	5	
4	6	
5	5	
6	4	
7	12	
Total	50	

1. (4 points each) Let $f(x) = 3x^2 - 5x$ and $g(x) = x - 2$. Find the following. Simplify (when applicable).

(a) $(fg)(1)$

(b) $(f - g)(x)$

(c) $(f \circ g)(x)$

2. (3 points each) Let $f(x)$ be the function given by the table

x	f(x)
-2	4
0	2
2	3
3	-2

(a) Find $(f \circ f)(0)$

(b) Find $f^{-1}(-2)$.

3. (5 points) Find all zeros of the polynomial $P(x) = x^3 - 6x^2 + 9x$. State the multiplicity of each zero.

4. (6 points) Divide $P(x) = 2x^3 - x^2 - 7x + 2$ by $D(x) = x^2 - 2x - 1$. Express your answer in the form $Q(x) + \frac{R(x)}{D(x)}$.

5. (5 points) Use synthetic division and the Remainder Theorem to find $P(-3)$ if $P(x) = 2x^4 + 5x^3 - 4x^2 + 5$.

6. (4 points) List all possible rational zeros of $P(x) = 2x^3 - 5x^2 + x + 6$ given by the Rational Zeros Theorem (but don't bother checking which are actually zeros).

7. (6 points each) Let $r(x) = \frac{x^2+3x+2}{2x^2-18}$.

(a) Find the x - and y -intercepts of $r(x)$.

(b) Find all asymptotes of $r(x)$. (You do *not* need to draw the graph.)