MATH 111 EXAM 2, Fall 2004

Simplify all answers. Show your work.	Name:	Score

1. Determine if the given functions are even, odd or neither. Explain!

a) $f(x) = 8x^3 + 4x$

Ans:_____.

b) $f(x) = (x^2 + 5)/(x^2 - 5)$

Ans:_____.

2. Explain how the functions below are related in terms of shift, stretching and compression.

a) $f(x) = x^3, \quad g(x) = (x + 2)^3 - 4.$

b) $f(x) = |x|, \quad g(x) = -3|x + 4|.$

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3. Let $f(x) = -x^3 + 3x + 2$ on the interval $[-4, 4]$. (Show the graph!)

a) Find the local minimum.

Ans:_____.

b) Find the x-intercept.

Ans:_____.

4. Let $f(x) = 2x + 7$ and $g(x) = \sqrt{x + 2}$. Find:

a) $(f \cdot f)(2)$

Ans:_____.

b) $(f \circ g)(2)$

Ans:_____.

5. Let $f(x) = x^2 - 4$ and $g(x) = \sqrt{x + 4}$. Determine whether $(f \circ g)(x) = (g \circ f)(x)$. (Be careful!)

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

Ans:_____.

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

Ans:_____.

Part II.	Name:

6. Let $f(x) = \dfrac{x^2-4}{x+1}$. Find: a) The vertical asymptotes. b) The oblique asymptotes. Show the graph

a) Ans:_____.

b) Ans:_____.

7. Carry out the indicated operations. Write the answer in the form $a + ib$.

a) i^{-15} Ans:_____.

b) $\dfrac{2i}{5+12i}$ Ans:_____.

8. a) Solve: $x^2 + 2x + 3 = 0$ Ans:_____.

b) Solve: $x^4 + 10x^2 + 9 = 0$ Ans:_____.

9. Find all the roots and their multiplicities.

a) $4(x^2-4)^3(x+2)^4 = 0$ Ans:_____.

b) $x^3 = 36x$. Ans:_____.

10. Solve the inequalities.

a) $x^2 + 3x - 10 > 0$ Ans:_____.

b) $\dfrac{(x-3)(x-5)}{x+1} \leq 0$ Ans:_____.

Extra Space