

MATH 111 EXAM 2, Fall 2007

Simplify all answers. Show your work.		Name:	Score		
1.	Find the domain of the following functions: a) $f(x) = \sqrt{x-5}$		b) $f(x) = x/(x^2 - 25)$	1	
				2	
				3	
				4	
				5	
				6	
				7	
Ans: _____ .		Ans: _____ .			
2.	Explain how the functions below are related in terms of shifts, stretching, compression and reflections. a) $f(x) = x $, $g(x) = -4 x $.		b) $f(x) = x^3$, $g(x) = 3(x-2)^3 + 4$.	8	
				9	
				10	
				Tot	
3.	Let $f(x) = 4x^2 - 12x + 13$. Find <u>by hand</u> (no calculators): a) The vertex.		b) The minimum.		
				Ans: _____ .	
4.	Let $f(x) = x^3 - 2x + 4$. Compute to three decimal places: a) The x-intercept. (Show the graph!)		b) The local minimum.		
				Ans: _____ .	
5.	Let $f(x) = \begin{cases} x^2 & x \leq 2 \\ 3-x & x > 2 \end{cases}$ a) Graph the function		b) Compute $f(-1)$ and $f(4)$.		
				f(-1): _____ . f(4): _____ .	
Extra Space					

5. The elongation y in cm. of a spring under a mass load x in grams is given by the following data:

x	1	2	3	4	5	6	7	8
y	4.2	8.7	11.2	15.1	21.0	23.7	28.9	31.3

a) Find the equation of the best fit line.

b) What is the predicted elongation for a mass of 12 gm?

Ans: _____.

Ans: _____.

6. Let $f(x) = \frac{x^2 - 9}{x - 2}$. Find: a) The zeros and vertical asymptotes. b) The oblique asymptotes. Show the graph

a)

b)

Zeros: _____ . Asym: _____.

Asym: _____.

7. Solve the inequalities.

a) $x^2 - 5x - 6 > 0$.

b) $\frac{(x - 5)}{(x + 3)(x - 1)} \leq 0$.

Ans: _____.

Ans: _____.

8. Find all the roots and their multiplicities.

a) $9(x - 5)^3(x^2 - 36) = 0$.

b) $x^4 = 16x^2$.

Ans: _____.

Ans: _____.

9. Let $f(x) = 3x^4 + 3x^3 - 16x^2 + 2x - 12$.

a) List all the possible rational roots.

b) Use the Remainder theorem to see if $x = 2$ is root.

Ans: _____.

Ans: _____.

10. Find a third degree polynomial with the given roots:

a) $x = 2$. Double root at $x = 1$.

b) $x = 3$ and $x = 2i$.

Ans: _____.

Ans: _____.

Comments about this test: