

**NAME:**

MATH 103 Gateway Exam Practice 3

30 October 2008

100 points

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**Instructions:**

1. This exam has 4 pages (including this one), which contain 10 questions. Please check that you have all of the pages.
  2. When an answer box is given, write your answer in the box. Nothing outside the answer box will be graded.
  3. Do your work on scratch paper, not on this exam.
  4. You may not use a book, notes, a calculator, or anything except a writing instrument, an eraser, and scratch paper for this exam.
  5. There will be no partial credit given. You must get 8 out of 10 questions completely correct in order to pass this exam. A passing score on this exam will give you 100 points toward your grade for this course.
  6. You have 50 minutes to complete this exam.
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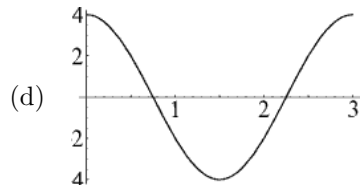
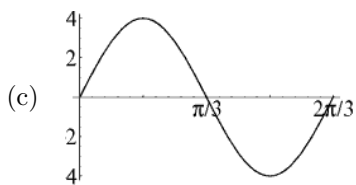
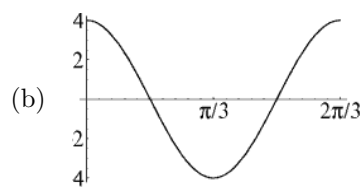
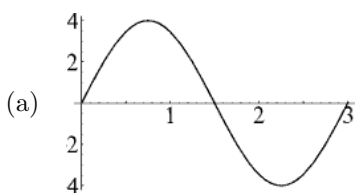
**Question 1.** Select all intervals for which  $|3 - 10x| > 7$  is true.

- $(1, \infty)$   
  $(-2/5, 1)$   
  $(-\infty, -2/5)$   
  $(-\infty, -1)$   
  $(-1, 2/5)$

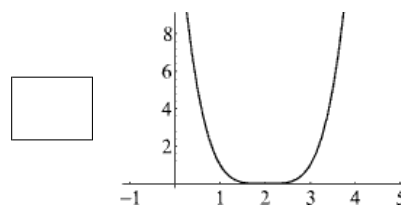
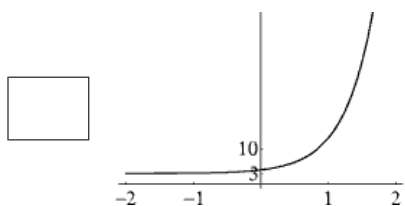
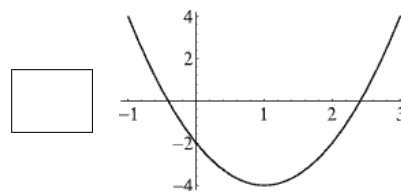
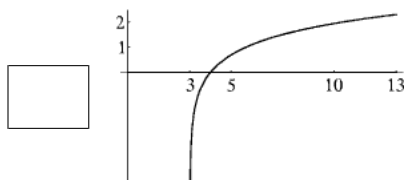
**Question 2.** If  $\cos \theta = 1/2$  and  $0 \leq \theta \leq \pi/2$ , what is  $\theta$  in radians?

ANSWER

**Question 3.** Which of the following graphs best represents  $y = 3 \cos\left(\frac{2\pi}{3}x\right)$ ?



**Question 4.** Match the following graphs with their formulas.

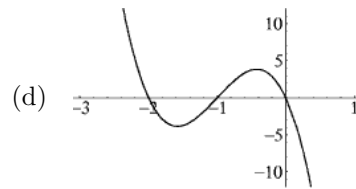
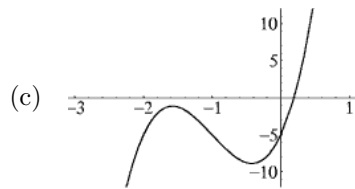
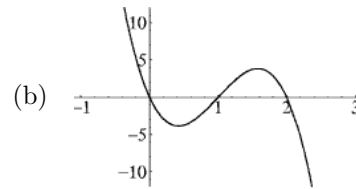
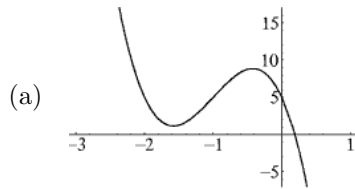
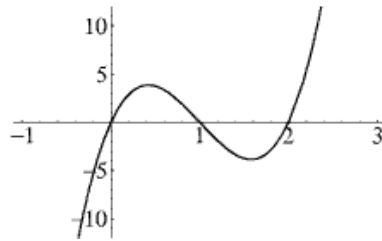


1.  $\ln(x - 3)$
2.  $2(x - 1)^2 - 4$
3.  $10^x + 3$
4.  $(x - 2)^4$

**Question 5.** Find the equation for the secant line of  $y = -3x^2$  from  $(-1, -3)$  to  $(1, -3)$ .

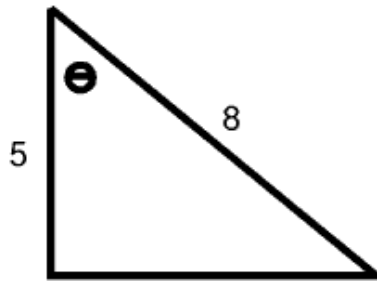
ANSWER

**Question 6.** Given the graph of  $y = f(x)$  below, select the graph of  $y = -f(x + 2) + 5$ .



(e) None of the others

**Question 7.** What are  $\cos \theta$ ,  $\sin \theta$ , and  $\csc \theta$ ?



ANSWER

**Question 8.** Find the solution(s) to the equation  $\log(5 + 4y) - \log(3 + y) = \log 3$ .

ANSWER

**Question 9.** Solve the equation  $H = \frac{kA(t_2 - t_1)}{L_1}$  for  $L_1$ .

(a)  $\frac{H}{kA(t_2 - t_1)}$

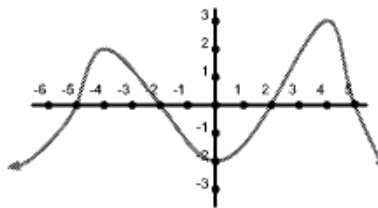
(b)  $\frac{1}{H - kA(t_2 - t_1)}$

(c) None of the others

(c)  $\frac{kA(t_2 - t_1)}{H}$

(d)  $HkA(t_2 - t_1)$

**Question 10.** Given the graph of  $y = f(x)$  below, select all intervals on which the function is decreasing.



$(4, \infty)$

$(-2, 2)$

$(-4, 0)$

$(-\infty, -5)$

$(-5, 0)$