

Name \_\_\_\_\_ Banner: \_\_\_\_\_

Write your name and Banner here and here.

ParSCORE™  
Test Form - 8000  
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Compatible with Scantron 8000 Series  
and 886P scanners only.

**DIRECTIONS**  
USE NO. 2 PENCIL ONLY  
• MAKE DARK MARKS  
• ERASE COMPLETELY TO CH/  
• EX. A B C

Use a number 2 pencil.  
Make sure you have a 2nd  
Parscore in case you erase a  
hole through this one.

**ID NUMBER**  
0 0 1 2 3 4 5 6  
1 1 1 1 1 1 1 1  
2 2 2 2 2 2 2 2  
3 3 3 3 3 3 3 3  
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6 6 6 6 6 6 6 6  
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8 8 8 8 8 8 8 8  
9 9 9 9 9 9 9 9

Fill in your Banner I.D.  
Leave out the @ symbol.  
Start on the left.  
Fill in the corresponding bubbles.

**TEST FORM**  
A B C D

Fill in your Test Form.  
Your Form letter is at the  
top of the next page.

★ Do this  
or  
FAIL!

**EXAM NUMBER**  
0 0 0  
1 1 1  
2 2 2  
3 3 3  
4 4 4  
5 5 5  
6 6 6  
7 7 7  
8 8 8  
9 9 9

Select **ONE LETTER PER PROBLEM** and  
**CIRCLE YOUR ANSWERS** on your exam.

**NAME** MATHUS  
**LAST** Moe  
**DATE** SPRING  
**SUBJECT** 1093.00X  
**HOUR/DAY** 2007

Print your last and first names legibly.  
Print your class number and section that you  
are enrolled in legibly.  
MWF 10am = 1093.002  
TTH 8am = 1093.005  
TTH 2pm = 1093.008

1-50 multiple choice bubbles (A-E) with a key on the right.

Separate the pages of the exam and use the back of the paper as scratch paper. I'll have a stapler to staple your exam back together. Grades will be available in WebCT as soon as possible.

Cover your work and your Parscore. Don't talk or look around the room like an idiot. If something is illegible then please notify me. If a question is ambiguous then please ask me to clarify.

DON'T GIVE UP! Do your best on every problem. You are not supposed to already know the answer, you are to figure it out using what you know. Use all of your available time. If you finish early, redo the problems to verify correctness. Don't "check your work"; redo it separately without looking at your previous work.

# EXAM FORM A

1) If there are 239 beans in a can and 21 cans in a case of beans and 17 cases in a box of beans and you have 501,900 beans, how many full boxes of beans do you have?

a) 4

b) 5

c) 6

d) 7

e) None of the above

2) Which of the following are completely true?

a)  $\sum_{n=0}^{\infty} (-1)^n (2n)! = 0! - 2! + 4! - 6! + \dots = 1 - 2 + 24 - \dots$

b)  $\{ \pi/2 + n\pi ; n \in \mathbb{Z} \} = \{ \dots, -5\pi/2, -3\pi/2, -\pi/2, \pi/2, 3\pi/2, 5\pi/2, \dots \}$

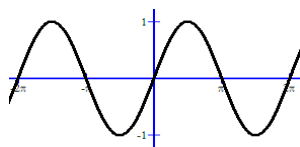
c)  $\pi^\circ < \pi \text{ rad}$

d) All of the above

e) None of the above

3) The fact that  $\sin(x)$  is an odd function can be determined from:

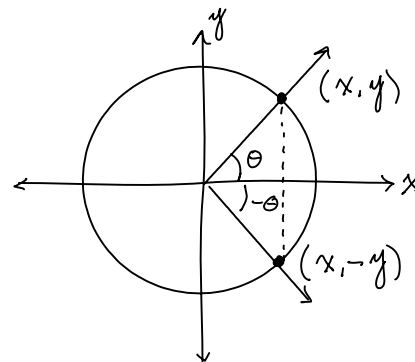
a) the graph of  $\sin(x)$



since it is symmetric about the origin.

b) the algebraic representation of  $\sin(x) = \sum_{n=0}^{\infty} (-1)^n \frac{x^{2n+1}}{(2n+1)!}$  since it involves only odd powers of  $x$ .

c) the geometry of the unit circle by noticing that given an angle  $\theta$ , the  $y$  coordinate of the corresponding point on the unit circle has the opposite sign of the one for  $-\theta$ .



d) All of the above

e) None of the above

4) Which of the following are completely true?

a)  $\tan\theta = 1/2 \Rightarrow \sin\theta = 1$  and  $\cos\theta = 2$  since  $\tan\theta = \sin\theta/\cos\theta$

b)  $\sec\theta = 1/\sin\theta$  and its domain is  $\mathbb{R} \setminus \{n\pi, n \in \mathbb{Z}\}$

c)  $\cot(-\theta) = \frac{\cos(-\theta)}{\sin(-\theta)} = \frac{\cos\theta}{-\sin\theta} = -\cot\theta \Rightarrow \cot\theta$  is an even function.

d) All of the above

e) None of the above

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5) Which of the following are completely true?

a)  $\frac{1}{\sec^2\theta} + \frac{1}{\csc^2\theta} - 1 = 0$

b)  $\frac{\cos(1^\circ) + \cos(2^\circ) + \dots + \cos(359^\circ)}{\sin(1^\circ) + \sin(2^\circ) + \dots + \sin(359^\circ)} = \tan(1^\circ) + \tan(2^\circ) + \dots + \tan(359^\circ)$

c)  $\cos(20^\circ) + \sin(250^\circ) = \cos(50^\circ) - \sin(220^\circ)$

d) All of the above

e) None of the above

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6) Which of the following are completely true?

a)  $\sin(2x)$  and  $\frac{1}{2}\sin(x)$  have the same graph.

b)  $\cos(2x - \pi)$  and  $\cos(\pi x - 2)$  have the same graph.

c)  $\cos(4x - 2\pi)$  and  $\cos(4x)$  have the same graph.

d) All of the above

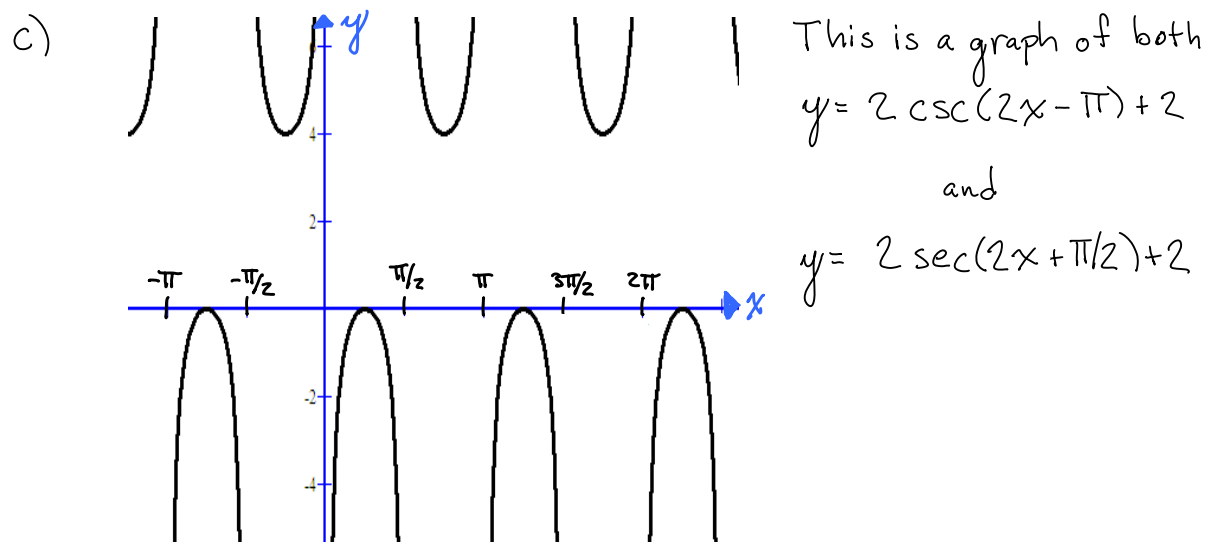
e) None of the above

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7) Which of the following are completely true?

a)  $\sec^2 x - \tan^2 x = \csc^2 x - \cot^2 x$  is an identity

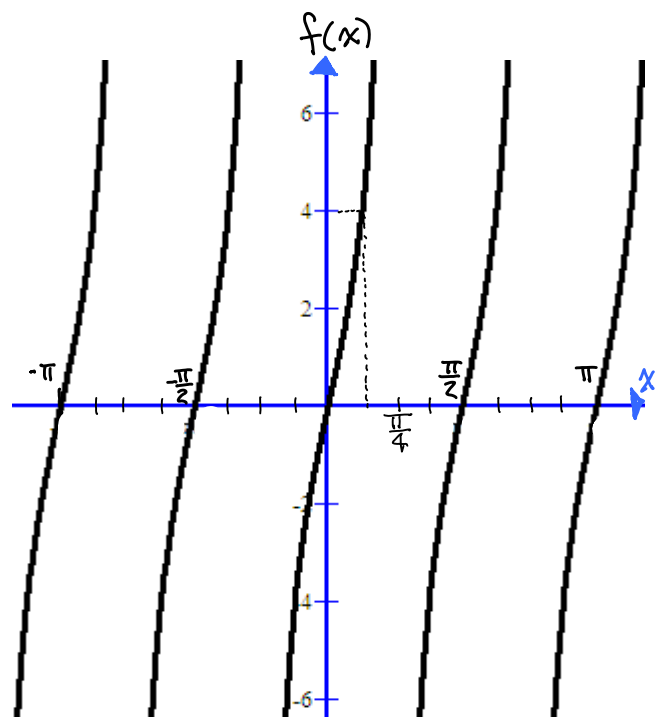
b)  $\tan^2 x + 1 = 1/(1 - \sin^2 x)$  is an identity



d) All of the above

e) None of the above

8)



Which of the following is true?

a)  $2f(x) = \tan(2x) + 4$

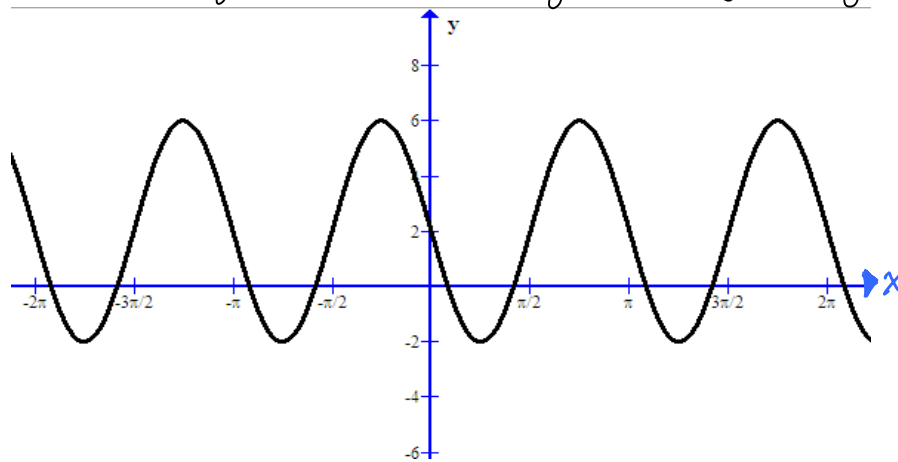
b)  $(1/4)f(x) = \tan(4x)$

c)  $4f(x) = \tan(2x)$

d)  $(1/4)f(x) = \tan(2x)$

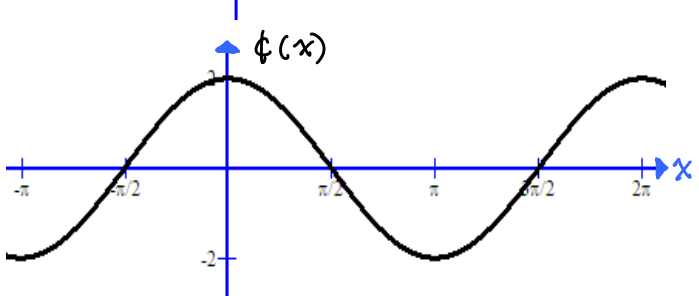
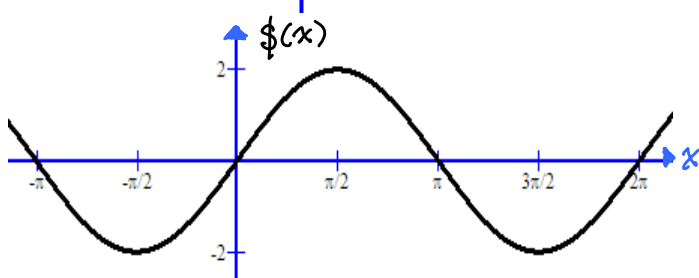
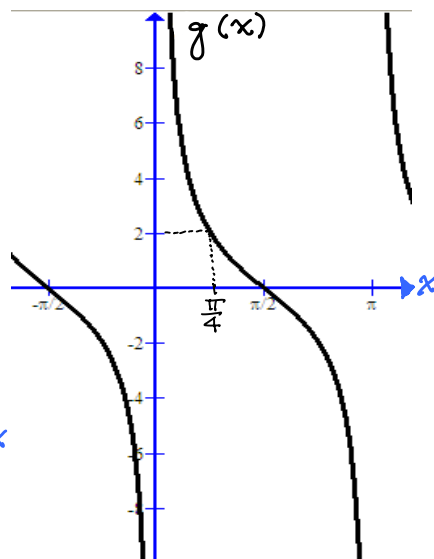
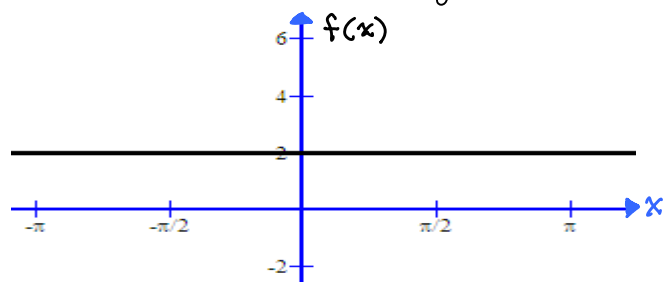
e) None of the above

9) Which of the following is NOT completely true regarding this graph?



- a) If treated as a sine graph, its phase shift is  $\pi/2$  or  $-\pi/2$
- b) If treated as a cosine graph, its phase shift is  $3\pi/4$  or  $-\pi/4$
- c) The amplitude is 6 and  $T = \pi$
- d) All of the above are completely true.
- e) All of the above are NOT completely true.

10) Which of the following are completely true about the following graphs?



- a)  $f(x) = 2(\sin^2 x + \cos^2 x)$   
and  $g(x) = 2 \tan(x)$
- b)  $\psi(x - \pi/2) = \phi(x)$   
and  $g(x + \pi/2) = -2 \tan(x)$
- c)  $f(x) = (1/2)(\psi^2(x) + \phi^2(x))$

- d) All of the above
- e) None of the above

- 1) EXTRA CREDIT (10 Points): If  $g(x) = 4x^2$  and  $f(x) = 4x^2 - 12x + 9$ , then
- a) The graph of  $f(x)$  is a graph of  $g(x)$ , except shifted to the right by  $3/2$ .
  - b) The graph of  $f(x)$  is a graph of  $g(x)$ , except shifted to the right by  $12x$  and shifted up by  $9$ .
  - c) The graph of  $\frac{1}{g(x)}$  has a vertical asymptote at  $x = g(0)$  but  $\frac{1}{f(x)}$  has a vertical asymptote at  $x = g(3/2)$
  - d) All of the above
  - e) None of the above
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