

Test 2A, Math 130.001

SSII, 2009

Name: _____

PID Number: _____

I pledge that I have neither given nor received any unauthorized assistance on this exam.

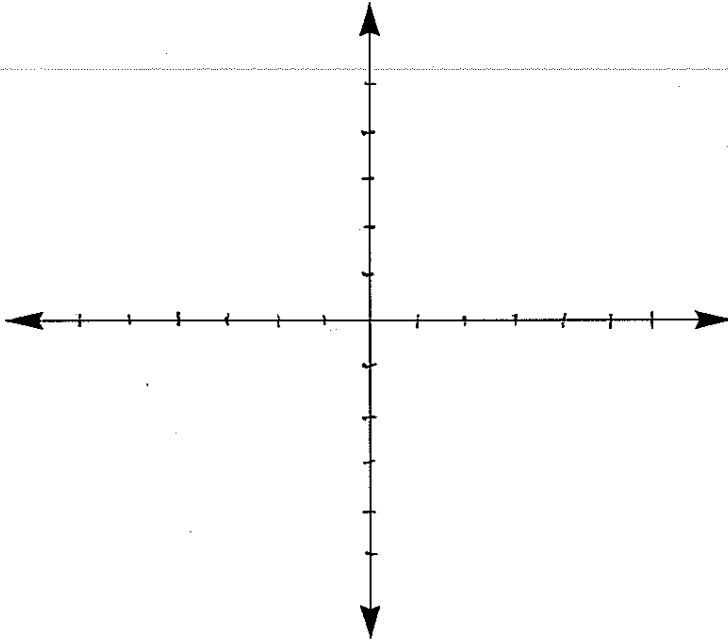
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DIRECTIONS

1. Show all of your work. A correct answer with insufficient work will be counted wrong.
2. Clearly indicate your answer by putting a box around it.
3. Calculators are allowed on this exam, but NOT cell phones or laptops.
4. Give all answers in exact form, not decimal form (that is, put π instead of 3.1415, $\sqrt{2}$ instead of 1.414, etc) unless otherwise stated.
5. Total number of questions = 10. Total points = 100.
6. Make sure you sign the pledge and write your PID on both pages.

PID Number: _____

1. (10 points) Graph $y = 2 \tan(-3x + \frac{\pi}{2})$



2. (12 points) For a health-care rally, protesters are flying a giant inflatable doctor balloon. Bob and Jim are holding the doctor down with wires. Bob's wire has an angle of elevation of 58° and is 100 feet long. Jim's wire has an angle of elevation of 68° . Calculate how high the doctor is above the ground (h) and also how long Jim's wire is. Round your answers to the nearest tenth of a foot.

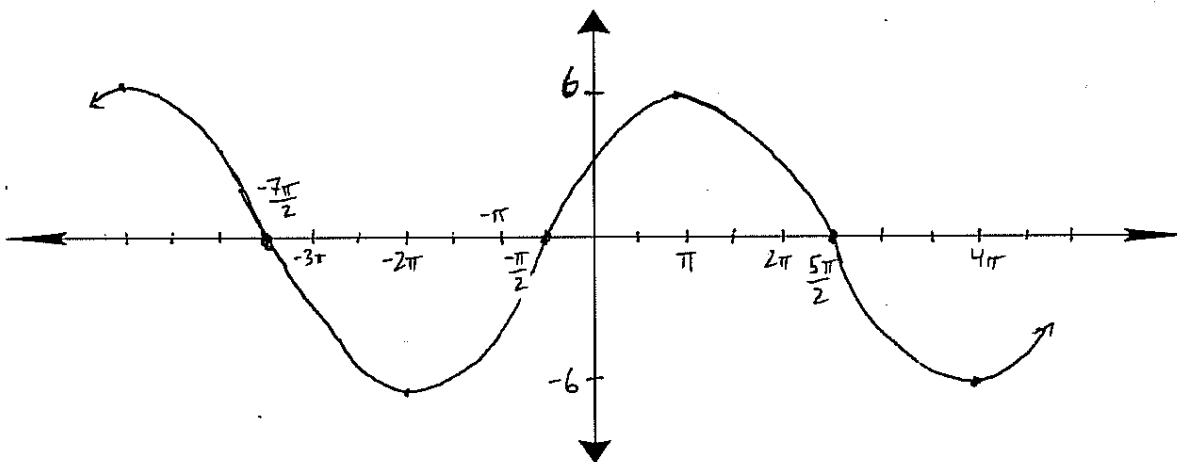
3. (10 points) Find all θ in $[0, 4\pi)$ that satisfy $\sec \theta = -2.917$ (Round your answers off to the nearest 0.01 radian).

4. (6 points) Find the exact value of $\sec\left(\frac{2\pi}{3}\right) + \sin\left(\frac{-3\pi}{4}\right)$

5. (12 points) Verify the following identity:

$$\frac{\sec(-x) + \csc(-x)}{\tan(-x) + \cot(-x)} = \cos x - \sin x$$

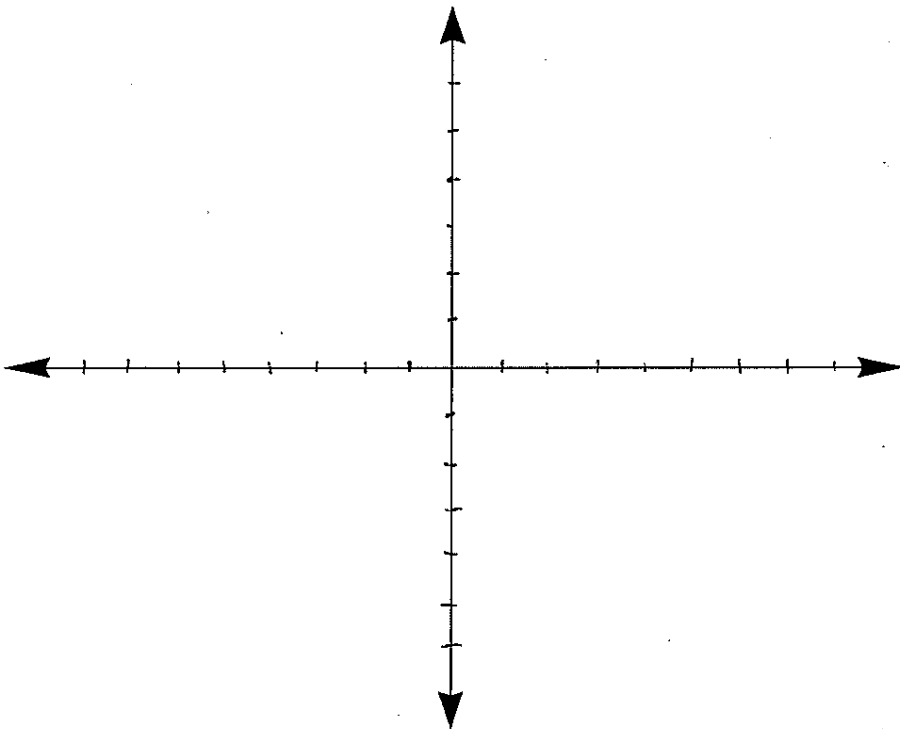
6. (12 points) Write an equation for the following graph. Your answer can either be of the form $y = a \sin(bx + c)$ or $y = a \cos(bx + c)$.



Answer: $y =$ _____

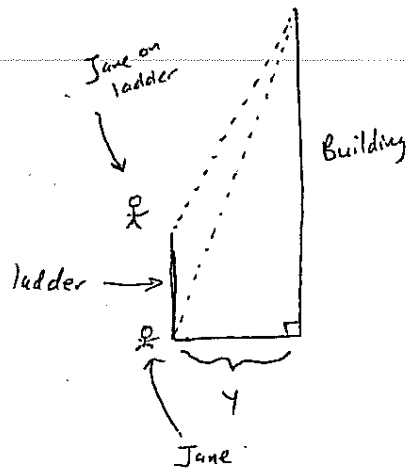
7. (8 points) Find the exact values of all β in the interval $[0, 2\pi)$ that satisfy the equation $\tan \beta = -\sqrt{3}$

8. (10 points) Graph $y = 3|\sin(2x)| + 1$



9. (12 points) Jane is standing y feet from a tall building with a 100 foot tall ladder standing next to her. The angle of elevation from Jane to the top of the building is 63° . When Jane climbs to the top of the ladder, the angle of elevation from Jane to the top of the building is now 57° . Calculate the height of the building to the nearest foot.

Diagram



10. (8 points)

- (a) As $x \rightarrow \left(\frac{-\pi}{4}\right)^-$, $\tan x \rightarrow$ _____
- (a) As $x \rightarrow \left(\frac{\pi}{2}\right)^-$, $\tan x \rightarrow$ _____
- (a) As $x \rightarrow \pi^-$, $\sin x \rightarrow$ _____
- (a) As $x \rightarrow \pi^+$, $\csc x \rightarrow$ _____

Extra Credit(2 points): Graph the function $y = (\sin x)(\cos x)$. Explain how you find the intercepts and the maximum and minimum values.