

Math 251 Lab #2b; “Review” of Functions, Expo’s, Log’s and Trig; Names(s) _____

In this lab you will do several problems that will help your “remember” some your trig skills. Completeness, neatness as well as accuracy are weighed when calculating your grade. You are encouraged to work in pairs or groups of 3 or 4. If you do work with more than one person, only hand-in one lab write-up per group with all names neatly written on the lab. Each person will receive the same grade in the group. To reward you for your group-work efforts you will each get 10% bonus added back to your score. This lab is due the next class meeting. We will have about a half hour that you can get together in your groups to compare answers and turn in your neatest selection. Write **ONLY YOUR ANSWERS HERE**, show additional work on a separate paper and staple it to this sheet. Late work turned in after Wednesday will be reduced by 50%. This lab is worth 75 points.

1. Some problems to solve:

For a)-e) find the exact form of the solution and for c)-e) also approximate to nearest 100th. (15pts)

a) If $\sin(\theta) = 4/7$ and θ is in the second quadrant, find the $\tan(\theta)$.

b) If $\sin^{-1}(2/3) = \alpha$ and α is in the first quadrant, find the $\cot(\alpha)$.

c) $\log_4(x - 2) = 1.25$ ← that’s “log base 4”

d) $5^{x+1} = 100$

e) $5000 = 75e^{0.05x}$

2. Find y if $\cos(y) = -.25$ and y is in the 3rd quadrant. Express your answer in both radians and degrees to the nearest 100th; you will not be writing your radian measure as a multiple of π and make sure to use the degree symbol. (6 pts)

3. Find the exact values for the following expressions. Drawing a reference triangle will help. (8 pts)

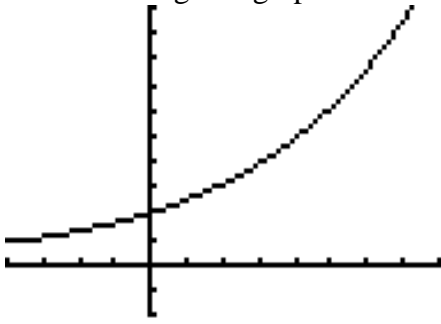
a) $\tan(\arcsin 5/13)$

b) $\cos(\arcsin 2/3)$

4. Find a sine function that has amplitude 3 and a period of 4, and then sketch a graph of this function, showing at least one full period. Label your units on each axis. (8 pts)

5. Find the equation of the given exponential function, $f(x) = Pa^x$. (8 pts)

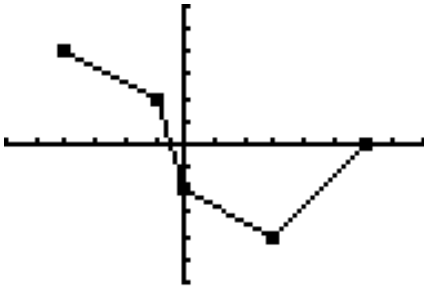
Hint → Use the given graph and the window settings to find the values of P and a to the nearest 100th. Show work.



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WINDOW
Xmin=-4
Xmax=8
Xscl=1
Ymin=-4
Ymax=20
Yscl=2
Xres=1
    
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6. Let $f(x) = 5 - 2x$, $y = g(x)$ be the given graph and $y = t(x)$ be the given table. Find the following values.



x	-4	-2	0	2	4	6
t(x)	-6	0	3	5	2	0

(18 pts)

a) $(f+g)(2) =$

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

c) $(t \circ g)(3) =$

d) $(t \circ t)(4) =$

e) $(f \circ f)(2) =$

f) $(g \circ g)(-1) =$

g) $(g \circ f)(0) =$

h) $(g \circ f)(-1) =$

i) $(f \circ g \circ t)(0) =$

7. Let $f(x) = x^2 - 3x - 5$ (12 pts)

a) Find the average rate of change (slope) between $x = 2$ and $x = 4$.

b) Find the average rate of change (slope) between $x = 2$ and $x = 3$.

c) Find the average rate of change (slope) between $x = 2$ and $x = 2.5$

d) Find the average rate of change (slope) between $x = 2$ and $x = 2.1$

e) Find the average rate of change (slope) between $x = 2$ and $x = 2 + h$

f) Approximate the slope at $x = 2$