MATH 121 – Precalculus
Fall 2015

Exam 2
October, 19

Name: _____

UIN: _____

T/TH class time:: _____

email: _____

- You are expected to abide by the University's rules concerning Academic Honesty.
- You may *not* use your books, notes, or any electronic device including calculators and cell phones.
- Show ALL your work. Unsupported answers will not receive credit.
- Always state a complete answer to the problem.
- Do not write above the type at the top of any pages. If you do, your work may not be graded in that area, because the scanner may miss it. Please check that all the page numbers on each page of your exam match.

Circle your instructor and TA:

Cohen:	McClellan	Pant	Chase	White
Kashcheyeva:	Jiang	Alibek		
Thulin:	Sartipi	Du		
Lukina:	Davies	Li		
Ross:	Zielinski	Ngom	Meng	

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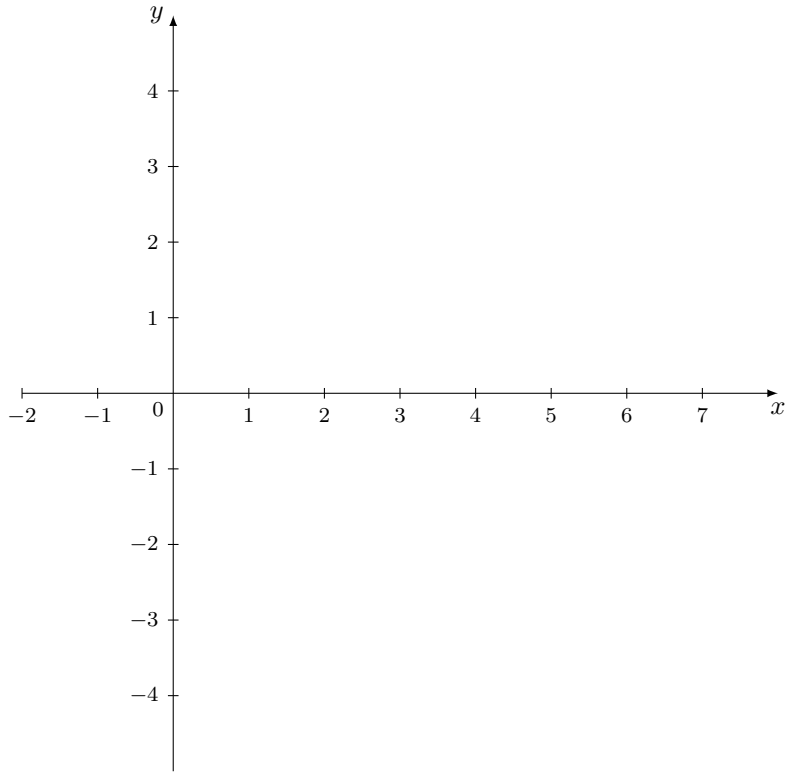
1. Let $f(x) = log_2(2x - 5)$

a. State the domain of $f(x)$.

b. Find $f(\frac{13}{2})$.

c. For what value of x is $f(x) = 0$?

d. Use your answers above to sketch the graph of $f(x)$. Label any asymptotes, and label the points you found from parts b and c.



2. Solve the following equation. $log_{\frac{1}{3}}(x+1) - log_{\frac{1}{3}}(x-1) = -1$

3. A population grows according to the following model, where t is the number of years after scientists began observing them.

$P(t) = \frac{730}{1+9(e^{-0.02t})}$

a. How many were in the initial population, $t = 0$?

b. How many years will it take the population to reach 100? Please leave your answer exact.

4. Draw each angle in standard position AND find the exact value of the trigonometric function.

a. $cos(-\frac{5\pi}{4})$

b. $tan(-\frac{2\pi}{3})$

5. If $sec(\theta) = 4$ and $tan(\theta) < 0$, find the exact value of all six trigonometric functions of θ. You do NOT have to rationalize your denominators.

$cos\theta =$

$sec\theta =$

$sin\theta =$

$csc\theta =$

$tan\theta =$

$cot\theta =$

6. John's bicycle's wheel has a radius of 18 inches. If he pedals such that it makes 5 revolutions per second, find his linear speed in ft/sec.

7. If $f(x)$ is the function given below, answer the following:
$f(x) = 6sin(\frac{\pi}{5}x) - 3$

a. State the amplitude of $f(x)$.

b. Find the period of $f(x)$.

c. What is the midline, or you can state the vertical shift, of $f(x)$?

d. Use your answers from parts a-c to sketch a graph of $f(x)$. Be sure to label the midline, lowest and highest values of $f(x)$ on the y-axis. Label your x-axis so that it is clear what the period of $f(x)$ is. Show at least two full periods on the graph.