Group: _____ _____ _____ Name:_____

Instructions. Put the first and last name of everyone in your workgroup at the top of your paper. Everyone should turn in their own worksheet, but the group's worksheets should be stapled together. Only one worksheet from each group will be graded, and everyone in the group will get that grade. Be sure to show your work and explain your reasoning.

We expect you to work together and discuss the problems. Please be kind and helpful with one another.

Class questions and precalculus review

First, some questions about the class:

1. Where do you do the homeworks, and when is the first homework due?
2. How and when do you attend the Thursday problem sessions? Where do you turn in the quiz?
3. Where is the class bulletin board? Can you post anonymously?

It's very important to have excellent precalculus and algebra skills. If you don't, you are likely to make small errors on the exams even though you understand the calculus, which can be very frustrating. If you're not sure you're ready, please look into switching to Math 115 so you can really polish the needed skills.

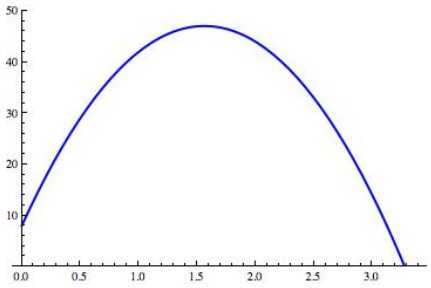
1. Find equations for the following lines and sketch their graphs.

   (a) The line with slope 3 and y-intercept 2.

   (b) The line with slope 3 passing through the point (2,1).

   (c) The line which contains the points (1,1) and (3,2).

2. The height and velocity of a projectile in feet at time t in seconds is given by:



$$p(t) = -16t^2 + 50t + 8, \qquad v(t) = p'(t) = -32t + 50$$

   (a) How high was the projectile when it was fired?

   (b) How fast was the projectile fired?

   (c) When is the projectile at the highest point?

   (d) How high does the projectile go?

3. Simplify $f(x) = \dfrac{x-5}{\sqrt{42x+46}-16}$.

4. **True or False:** The function $y = \dfrac{9x-63}{x^2+6x-91}$ has a vertical asymptote at $x = 7$.

5. Solve the inequality $|x-4| < 3$ and draw the solution set on a number line.

6. Sketch the graphs of each of the following functions by hand.

   (a) e^{-x}

   (b) $\ln(x-2)$

   (c) $\sqrt[3]{x}$

   (d) $|x| = \sqrt{x^2}$

7. Sketch the graphs of each of the following functions by hand.

   (a) $\sin x$

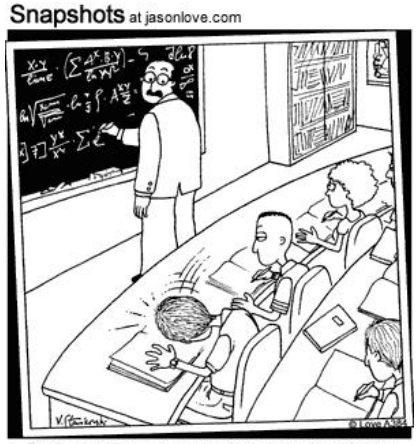
   (b) $\sin(\pi/2 - x)$

   (c) $\tan x$

   (d) $5 + 2\cos x$

8. Suppose we know that the statement "If A, then B" is true. Then does the statement"If B, then A" also have to be true? How about the statement "If not B, then not A"? Find "real world" implications to demonstrate your answer.

9. Draw a 30-60-90 triangle and a 45-45-90 triangle, each with a hypotenuse of length 1. Then fill in the lengths of the remaining sides. Use the unit circle $x^2 + y^2 = 1$ and your triangles to compute $\sin(7\pi/6)$ and $\sec(5\pi/3)$.



Professor Herman stopped when he heard that unmistakable thud – another brain had imploded.