Math 10a
August 28, 2014
Quantitative Reacquaintance

1. What positive number is one more than its reciprocal? Or is there such a number?

2. Without using a calculator, estimate 2^{15}.

3. If $|x - 2| < 3$ is true, is the statement "x is negative" necessarily false?

4. For what values of x is the following true?

$$\frac{1}{1 - x^2} > 1$$

5. Plot the graph of $y = \frac{1}{1-x^2}$.

6. Plot the line $y = 1$ on the previous graph. Do your answers to the previous two questions make sense together?

7. Plot the graph of $y = \ln(x)$. Where is the x-intercept? Can you plot any other points on the curve?

8. Without using a calculator, estimate $\log_2(32000)$.

9. Do you remember a formula for $\sin(2x)$ involving just $\sin(x)$ and $\cos(x)$? Can you write down a formula for $\sin(3x)$ involving just $\sin(x)$ and $\cos(x)$? (Maybe use an angle addition formula?)

10. What is the chance that the members of your group were born on different days of the week?

11. Write down your favorite Pythagorean triple. Draw the associated right triangle. Inscribe a circle. What's the radius of the circle?