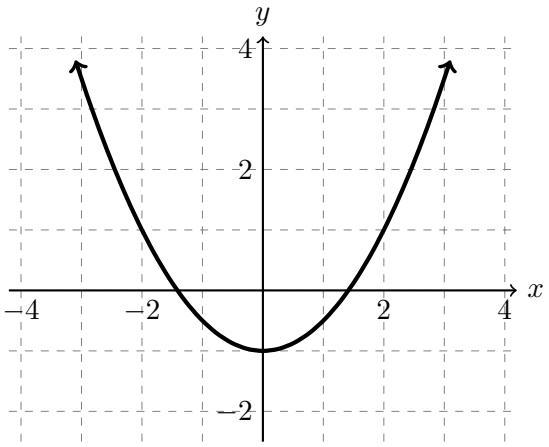
Math 251 Fall 2017 **Quiz #1.5, September 6**

Name: _____

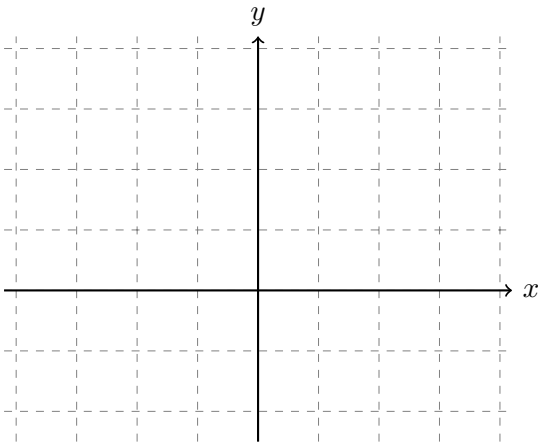
There are 25 points possible on this quiz. This is a closed book quiz, but you are allowed to use a calculator and a ruler. **Please show all of your work!** If you have any questions, please raise your hand.

Exercise 1. (4 pts.)

1. The graph of the function $f(x)$ is given below. Draw on the same axes the function $g(x) = 2f(x)$.



2. Graph $h(x) = 2 + e^{x-3}$ on the grid given below. You must clearly label any asymptotes and explicitly label two points on your sketch.



Exercise 2. (3 pts.) Find a formula for the inverse of the function $h(x) = \ln(3x - 1)$.

Exercise 3. (6 pts.) Determine whether the following statements are true or false. Circle T or F.

a) $(a+b)^2 = a^2 + 2ab + b^2$

T or F

b) $(e^{4x})^2 = e^{16x^2}$

T or F

c) $\sqrt{x^2 + y^2} = x + y$

T or F

d) $\dfrac{x^7}{x^{-2}} = x^9$

T or F

e) $\sin^{-1} x = \frac{1}{\sin x}$

T or F

f) $\ln(ex) = 1 + \ln x$

T or F

Exercise 4. (3 pts.) Solve $\sin x = 1$.

Exercise 5. (3 pts.) Find the domain of the function $f(x) = \frac{\sqrt{1-x}}{4-x^2}$. Give your answer in interval notation.

Exercise 6. (3 pts.) Expand the following logarithm: $\ln\left(\frac{\sqrt[3]{5+x}}{\sqrt{1-x^2}}\right)$

Exercise 7. (3 pts.) Find an equation of the line through the points $(-3,-2)$ and $(8,1)$. State the slope and the y-intercept.