

Quiz 4

Math 111

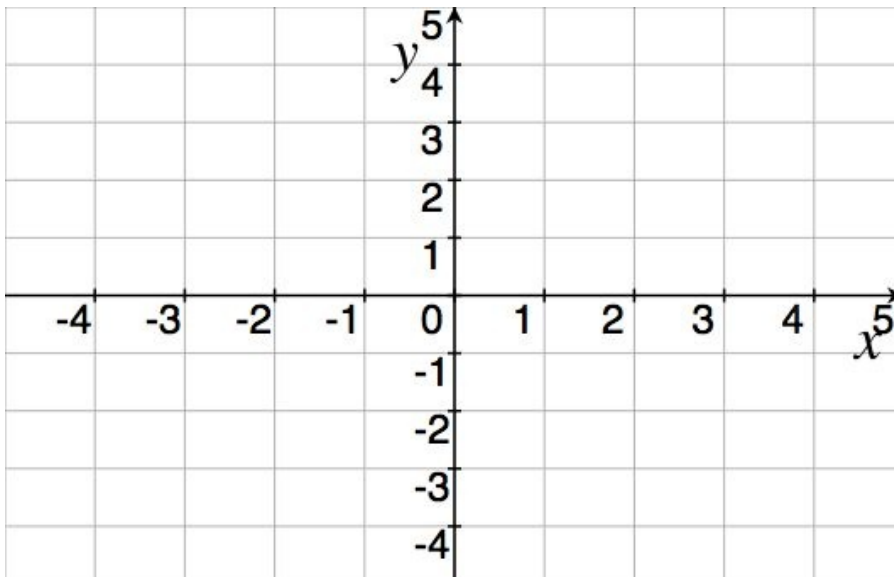
Name:

Show *all* your work algebraically for each and simplify. No credit is given without supporting work.

1. [5] Simplify the expression assuming $a, b > 0$.

$$\frac{(7a)^2(5b)^{\frac{3}{2}}}{(5a)^{\frac{3}{2}}(7b)^4}$$

2. [6] List the transformations needed to transform the graph of $h(x) = 2^x$ into the graph of $f(x) = 2^{x+2} - 5$. Graph both h and f . Be sure to identify which one is which.



3. Take an ordinary piece of typing paper and fold it in half; then the folded sheet is twice as thick as the single sheet was. Fold it in half again so that it is twice as thick as before. Keep folding in half as long as you can. Soon the folded paper will be so thick and small that you will be unable to continue, but suppose you could keep folding the paper as many times as you wanted. Assume that the paper is .002 inches thick.
- (a) [2] Make a table showing the thickness of the folded paper for the first four folds (with fold 0 being the thickness of the original unfolded paper).
- (b) [3] Find a function of the form $f(x) = Pa^x$ that describes the thickness of the folded paper after x folds.
- (c) [1] Explain how you would find the thickness of the paper after 20 folds?
4. [3] You have \$1 to invest for 1 year. The Exponential Banke offers to pay 100% interest compounded continuously. How much money do you have at the end of one year? Note: you can choose to round to the nearest penny or use notation to be very precise.