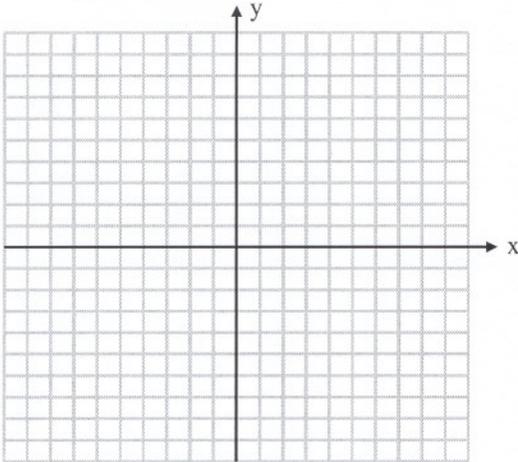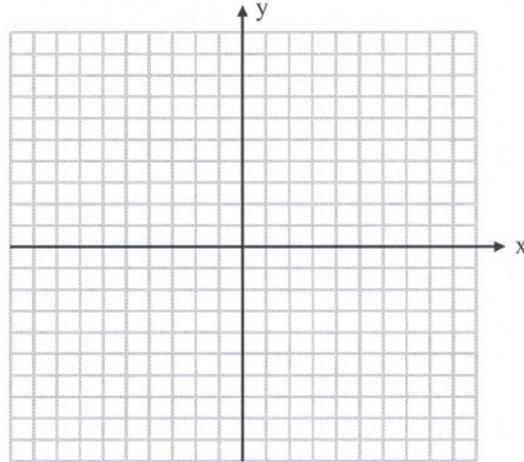Name_____

Exponential and Logarithmic Inequalities

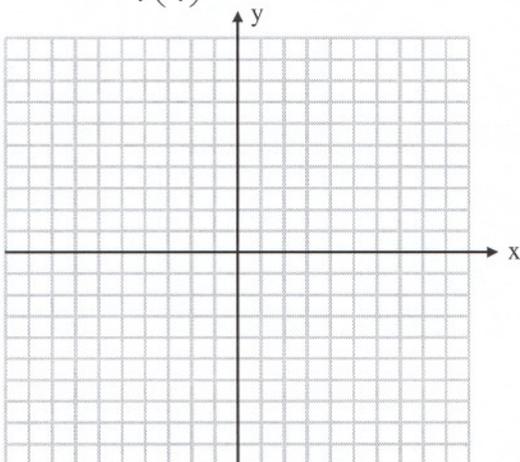Solve and graph.

1. $\dfrac{a^2}{a^x} \geq a^{-3}$

2. $\dfrac{x^6}{2x^{-2}} \cdot \dfrac{10}{x^7} < 20$

3. $2000 is deposited in an account that pays 8% annual interest, compounded annually. Will the account have a balance of at least $4000 in six years?

4. Complete the table for the following inequality and then

   graph: $y \geq \dfrac{1}{4}\left(\dfrac{3}{4}\right)^x$

x	y
-2	
-1	
0	
1	
2	

5. At least $100 is deposited in an account that pays 6% annual interest, compounded annually. Find the minimum balance after five years.

6. No more than $2000 is deposited in an account that pays 5% annual interest, compounded monthly. Find the maximum balance after one year.

7. What is the minimum amount that you must deposit in an account that pays 8% annual interest, compounded monthly, to have a balance of $1000 after one year?

8. Estimate the inequality for the following graph to the right.
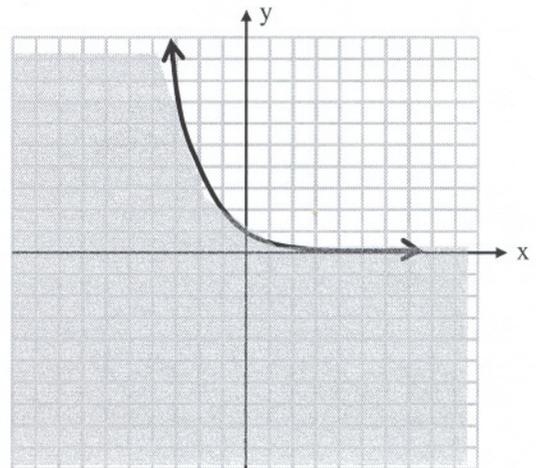
Use properties of logarithms to solve for x. (*Be sure to include any restrictions for x.)

9. $\log_4 2 - \log_4 x \le \log_4 \dfrac{2}{3}$

*10. $\log_3 3 > \log_3 x - \log_3 3$

*11. $\log_2 x < \dfrac{1}{2}\log_2 4$