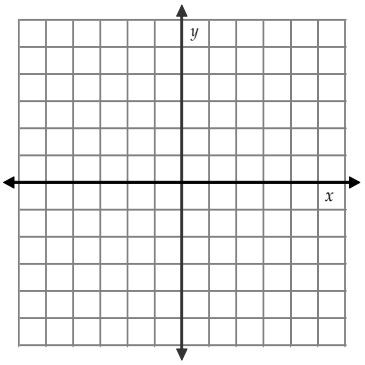
Math 3 Review 5A Worksheet: 5.1-5.4

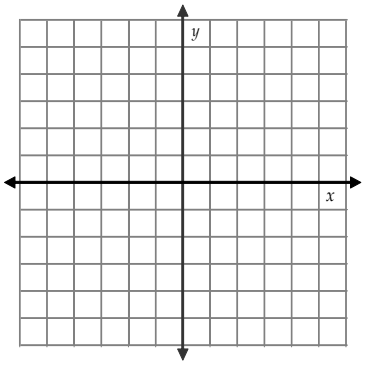
1. Simplify: a. $\sqrt{16e^{10x}}$ b. $\frac{15e^4}{3e^9}$ c. $(5e^{-4x})^3$

2. Tell whether the function represents exponential growth or exponential decay. Graph.

a. $y = 2e^x$



b. $y = ½e^{-x}$



3. a. Rewrite as an exponential expression: $\log_b a = c$

b. Rewrite as a logarithmic expression: $m^k = q$

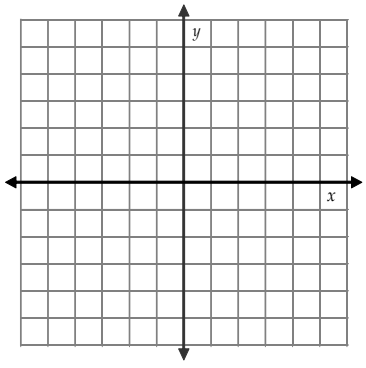
4. Evaluate without a calculator: a. $\log_6 1$ = ____ b. $\log_3 \frac{1}{81}$ = _____ c. $\log_{16} 4$ = _____

5. Simplify: a. $e^{\ln 7x}$ = ____ b. $8^{\log_8 2x}$ = _____ c. $\log_4 4^{3x}$ = _____

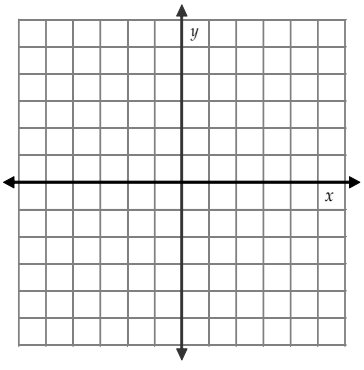
6. Find the inverse of the function: a. $y = 6^x + 2$ b. $y = \ln(x + 2)$

7. Describe the transformation of f represented by g. Then graph each function.

a. $f(x) = (\frac{1}{4})^x$, $g(x) = (\frac{1}{4})^{x-2} + 1$



b. $f(x) = \log_5 x$, $g(x) = 2\log_5(x + 3) - 1$



8. Use $\log_5 3 = 0.683$ and $\log_5 6 = 1.113$ and properties of logarithms to evaluate the following:

a. $\log_5 81$ = _____ b. $\log_5 \frac{1}{6}$ = ____ c. $\log_5 \frac{1}{2}$ = _____

9. Expand the logarithmic expression:

a. $\log_3 12x^7$

b. $\log \frac{5\sqrt{x}}{yz^2}$

10. Condense the logarithmic expression:

a. $2\ln 4 + 5\ln x - 3\ln y$

b. $\log_2 5 + \frac{1}{4}\log_2 x$

11. Use the change of base formula to evaluate the logarithm.

a. $\log_8 15$

b. $\log_3 40$

12. If $\log_b 5 = 0.222$, simplify $\log_b \sqrt{0.2b}$