Lesson 7.4 Worksheet

Name: _____

Rewrite the equation in exponential form.

1.) $\log_4 16 = 2$ 2.) $\log_7 343 = 3$ 3.) $\log_6 \frac{1}{36} = -2$ 4.) $\log_{64} 1 = 0$

Rewrite the equation in logarithmic form.

5.) $1{,}000 = 10^3$ 6.) $x^5 = 18$ 7.) $y = 3^x$ 8.) $23 = e^x$

Evaluate the logarithm without using a calculator.

9.) $\log_7 49$ 10.) $\log_9 1$ 11.) $\log_3 \frac{1}{27}$ 12.) $\log_{1/2} 8$

Simplify the expression using inverse properties of logarithms.

13.) $\log_5 5^x$ 14.) $30^{\log_{30} 4}$ 15.) $\log_2 32^x$

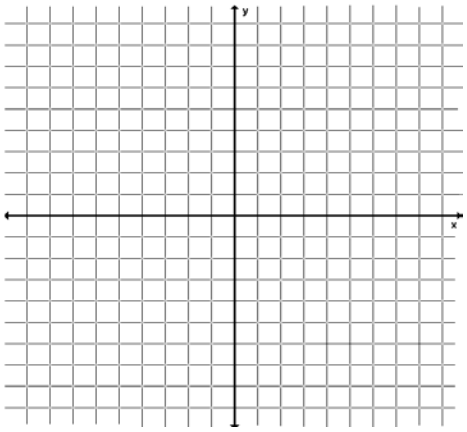
Find the inverse of the function.

16.) $y = \log_8 x$ 17.) $y = 7^x$ 18.) $y = e^{x+2}$

19.) $y = \ln(x + 1)$ 20.) $y = 2^x - 3$ 21.) $y = \log \frac{x}{2}$

Graph the function. Then state the domain and range.

22.) $y = \log_6 x$



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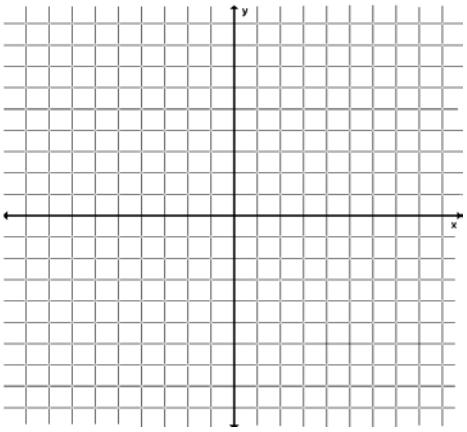
23.) $f(x) = \log_{1/3} x$



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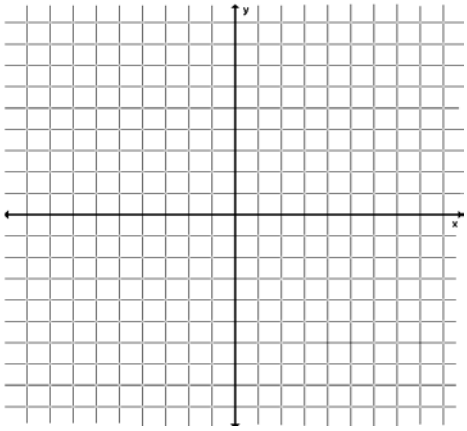
24.) $g(x) = \log_2(x - 3)$



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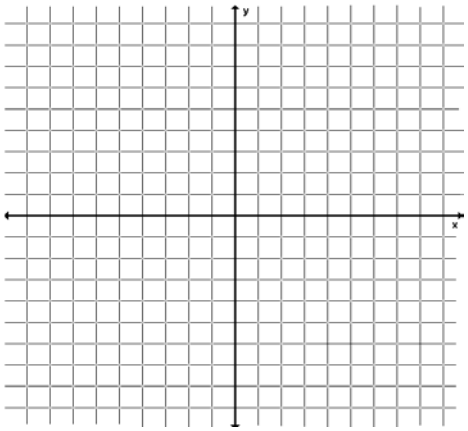
25.) $y = \log_5(x + 1) - 3$



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26.) The wind speed *S* (in miles per hour) near the center of a tornado is related to the distance *d* (in miles) the tornado travels by the model $S = 93 \log d + 65$. Approximate the wind speed of a tornado that traveled 75 miles.