

Inverses of Logarithms

Date _____ Period _____

Find the inverse of each function.

1) $y = \log_{\frac{1}{4}} x^2$

2) $y = \log_3 x^4$

3) $y = \log_6 x + 5$

4) $y = \log_{\frac{1}{5}} (3x + 6)$

5) $y = \log_2 2^x + 5$

6) $y = 3 \log_4 x^2$

7) $y = \log_4 (4^x - 9)$

8) $y = 5 \log_3 (-4x) + 2$

9) $y = -\log_4 x^3 + 7$

10) $y = \log_{\frac{1}{4}} (-4 \cdot 5^x) - 7$

$$11) y = 5^{\frac{x}{3}}$$

$$12) y = 5^{\frac{x}{2}}$$

$$13) y = -\frac{6^x}{3}$$

$$14) y = 5^x + 1$$

$$15) y = \frac{2^x + 8}{4}$$

$$16) y = \log_2 \frac{4^x}{2}$$

$$17) y = \frac{2^x + 5}{3}$$

$$18) y = \left(\frac{\left(\frac{1}{5}\right)^x - 6}{-4} \right)^{\frac{1}{5}}$$

$$19) y = \left(\frac{\left(\frac{1}{4}\right)^x - 3}{2} \right)^{\frac{1}{4}}$$

$$20) y = \left(\frac{3^x + 2}{-4} \right)^{\frac{1}{3}}$$

Inverses of Logarithms

Find the inverse of each function.

1) $y = \log_{\frac{1}{4}} x^2$

$$y = \frac{1}{\sqrt{4^x}}$$

2) $y = \log_3 x^4$

$$y = 3^{\frac{x}{4}}$$

3) $y = \log_6 x + 5$

$$y = 6^{x-5}$$

4) $y = \log_{\frac{1}{5}} (3x + 6)$

$$y = \frac{\left(\frac{1}{5}\right)^x - 6}{3}$$

5) $y = \log_2 2^x + 5$

$$y = \log_2 2^{x-5}$$

6) $y = 3 \log_4 x^2$

$$y = \left(4^{\frac{x}{3}}\right)^{\frac{1}{2}}$$

7) $y = \log_4 (4^x - 9)$

$$y = \log_4 (4^x + 9)$$

8) $y = 5 \log_3 (-4x) + 2$

$$y = \frac{3^{\frac{x-2}{5}}}{-4}$$

9) $y = -\log_4 x^3 + 7$

$$y = \left(4^{-x+7}\right)^{\frac{1}{3}}$$

10) $y = \log_{\frac{1}{4}} (-4 \cdot 5^x) - 7$

$$y = \log_5 \frac{\left(\frac{1}{4}\right)^{x+7}}{-4}$$

input
always
NEG
undefined!

$$11) y = 5^{\frac{x}{3}}$$

$$y = \log_5 x^3$$

$$12) y = 5^{\frac{x}{2}}$$

$$y = \log_5 x^2$$

$$13) y = -\frac{6^x}{3}$$

$$y = \log_6 -3x$$

$$14) y = 5^x + 1$$

$$y = \log_5 (x - 1)$$

$$15) y = \frac{2^x + 8}{4}$$

$$y = \log_2 (4x - 8)$$

$$16) y = \log_2 \frac{4^x}{2}$$

$$y = \log_2 2^{1+x}$$

$$17) y = \frac{2^x + 5}{3}$$

$$y = \log_2 (3x - 5)$$

$$18) y = \left(\frac{\left(\frac{1}{5}\right)^x - 6}{-4} \right)^{\frac{1}{5}}$$

$$y = \log_{\frac{1}{5}} (-4x^5 + 6)$$

$$19) y = \left(\frac{\left(\frac{1}{4}\right)^x - 3}{2} \right)^{\frac{1}{4}}$$

$$y = \log_{\frac{1}{4}} (2x^4 + 3)$$

$$20) y = \left(\frac{3^x + 2}{-4} \right)^{\frac{1}{3}}$$

$$y = \log_3 (-4x^3 - 2)$$