

Evaluate the expression using the Change of Base.

1) $\log_4 11$

≈ 1.729

2) $\log_{500} 1000$

≈ 1.112

3) $\log_6 0$

\emptyset

4) $\log_{15} 1250$

≈ 2.633

5) $7^x = 10$

≈ 1.183

6) $\log 75$

≈ 1.875

7) $\log_a x$

$\approx \frac{\log x}{\log a}$

8) $\log_{11}(-2)$

\emptyset

Use the change of base formula WITHOUT A CALCULATOR to Evaluate.

9) $\log_3 9$

2

10) $\log_5 \frac{1}{125}$

-3

11) $\log_6 \sqrt[3]{6}$

$\frac{1}{3}$

12) $\log_{(-4)} 16$

2

13) $\log 1000$

3

14) $3^{\log_3 4.52}$

4.52

15) $\log_\pi(e^2)$

$\frac{\log(e^2)}{\log(\pi)}$

16) $\log_3 3^{7+x}$

7+x

17) $\log_{1/4} \frac{1}{4} = x$

1

18) $\log_x 64 = 3$

4

19) $\log \frac{1}{1000} = x$

-3

20) $\log_b x = y$

$\frac{\log(x)}{\log(b)}$

Solve.

21) 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 equation, $s = 93 \log d + 65$. On March 18, 1925, a tornado whose wind speed was about 280 miles per hour struck the Midwest. How far did the tornado travel?

≈ 205.035 miles