

F&T
Solve using Logs

Name _____

Solve for x , only an algebraic solution will receive credit. [Round to 4 decimals]

1.) $3^x = 5$

$$x = \log_3 5$$

$$x = 1.4650$$

2.) $12^{2x} = 29$

$$2x = \log_{12} 29$$

$$\frac{2x}{2} = \frac{1.355\dots}{2}$$

$$x = .6775$$

3.) $\frac{3(2)^x}{3} = \frac{30}{3}$

$$2^x = 10$$

$$x = \log_2 10$$

$$x = 3.3219$$

4.) $5^x = 64$

$$x = \log_5 64$$

$$x = 2.5841$$

5.) $\frac{5(3)^{4x}}{5} = \frac{40}{5}$

$$(3)^{4x} = 8$$

$$4x = \log_3 8$$

$$\frac{4x}{4} = \frac{1.892\dots}{4}$$

$$x = .4732$$

Solve for x , round to 4-decimal places.

6.) $1 + 3e^{0.52x} = 37$

$$\frac{3e^{.52x}}{3} = \frac{36}{3}$$

$$e^{.52x} = 12$$

$$.52x = \log_e 12$$

$$.52x = \ln 12$$

$$.52x = 2.48 \dots$$

$$x = 4.7767$$

7.) $2e^{4x} + 1 = 25$

$$\frac{2e^{4x}}{2} = \frac{24}{2}$$

$$e^{4x} = 12$$

$$4x = \log_e 12$$

$$4x = \ln 12$$

$$x = .6212$$

8.) If $ae^{bt} = c$, where a , b , and c are positive, then t equals

(A) $\ln\left(\frac{c}{ab}\right)$

(B) $\ln\left(\frac{cb}{a}\right)$

(C) $\frac{\ln\left(\frac{c}{a}\right)}{b}$

(D) $\frac{\ln\left(\frac{c}{a}\right)}{\ln b}$

$$\frac{ae^{bt}}{a} = \frac{c}{a}$$

$$e^{bt} = \frac{c}{a}$$

$$bt = \log_e \frac{c}{a}$$

$$\frac{bt}{b} = \frac{\ln \frac{c}{a}}{b}$$

$$t = \frac{\ln \frac{c}{a}}{b}$$