

Name: Key (answers only)

I. Solve each exponential equation. Keep answers as fraction, if not round to 3 decimal places.

Must show ALL of YOUR WORK to RECEIVE CREDIT!!

1.) $\left(\frac{1}{2}\right)^{3-x} = 16$	2.) $-5e^{x+3} = -10$	3.) $64^x = 8^{2x+1}$	4.) $7^{x+2} = 3$
$X = 7$	$X = -2.307$	no solution $\emptyset$	$X = -1.435$

5.) $2e^{x-1} + 3 = -5$	6.) $125^{3x+1} \cdot 625^{-3x} = 125^{-3x}$	7.) $\frac{16}{3+e^{4x}} = 2$	8.) $243^{2x+2} \cdot 27^{-2x} = 9$
no solution $\emptyset$	$X = -\frac{1}{2}$	$X = 0.402$	$X = -2$

9.) $2^{-x} - 4 = 5$	10.) $36 \cdot \left(\frac{1}{6}\right)^{3-3x} = 216^{-2x-1}$	11.) $4e^{2x+3} - 1 = 11$	12.) $3^{2-5x} + 5 = 5$
$X = -3.170$	$X = -\frac{2}{9}$	$X = -0.951$	no solution $\emptyset$

II. Solve each logarithmic equation. Keep answers as fraction, if not round to 3 decimal places. Must show ALL of YOUR WORK to RECEIVE CREDIT!! CHECK YOUR SOLUTION(S)!

13.) $\log(3x+5) = 2$	14.) $2 - \ln(3-x) = 0$	15.) $\log_3(2-x) = 3$	16.) $\ln\sqrt{x+4} = 3$
$X = \frac{95}{3}$	$X = -4.389$	$X = -25$	$X = 399.429$

17.) $\log_4(\ln x + 5) = 2$	18.) $\ln(2+x) - \ln(x-3) = 1$	19.) $2\log x = \log 2 + \log(3x-4)$	20.) $\log_5\left(\frac{x+1}{x-1}\right) = 2$
$X = 59874.142$	$X = 5.910$	$X = 4$ $X = 2$	$X = \frac{13}{2}$

21.) $\log(2x-3) = \log(3-2x) - \log x$	22.) $\log_5(x-5) + \log_5(x+3) = 1$	23.) $\ln(5x-3) = \ln(x-1)$
no solution $\emptyset$ ( $X = 3/2$ and $X = -1$ ) are ex sol	$X = 6$ ( $X = -4$ is) ex sol	no solution $\emptyset$ ( $X = \frac{1}{2}$ is) ex sol