

I. State the translation(s), asymptote, domain, and range of each function using interval notation.

Given Exp/Log Function	Translation(s)	Asymptote	Domain	Range
1.) $f(x) = 3^x - 2$	down 2	HA: $y = 2$	$(-\infty, \infty)$	$(-2, \infty)$
2.) $f(x) = \log_4(x - 3)$	right + 3	VA: $x = 3$	$(3, \infty)$	$(-\infty, \infty)$
3.) $f(x) = (\frac{1}{2})^{x+4}$	left + 4	HA: $y = 0$	$(-\infty, \infty)$	$(0, \infty)$
4.) $f(x) = \log(x) + 5$	up 5	VA: $x = 0$	$(0, \infty)$	$(-\infty, \infty)$
5.) $f(x) = e^{x-3} + 1$	right + 3 up 1	HA: $y = 1$	$(-\infty, \infty)$	$(1, \infty)$
6.) $f(x) = \log_2(x + 2) - 4$	left + 2 down 4	VA: $x = -2$	$(-2, \infty)$	$(-\infty, \infty)$
7.) $f(x) = \ln(x - 5) + 3$	right + 5 up 3	VA: $x = 5$	$(5, \infty)$	$(-\infty, \infty)$
8.) $f(x) = 4^{x+1} - 3$	left + 1 down 3	HA: $y = -3$	$(-\infty, \infty)$	$(-3, \infty)$

II. Evaluate each expression or find the value of x. MUST SHOW WORK for credit!!

9.) $\log_2 x = 5$ $x = 32$	10.) $\log_4 16 = x$ $x = 2$	11.) $\log_x 81 = 4$ $x = 3$	12.) $\log_5 \left(\frac{1}{125} \right)$ $x = -3$
13.) $\log_8 \left(\frac{1}{4} \right) = x$ $x = -\frac{2}{3}$	14.) $4^{2\log_4 6}$ $= 36$	15.) $e^{\frac{1}{2}\ln 9}$ $= 3$	16.) $\log_3 \sqrt{27}$ $x = \frac{3}{2}$
17.) $\log 2 + \log 5$ $x = 1$	18.) $\log_2 \sqrt{\frac{1}{8}}$ $x = -\frac{3}{2}$	19.) $\log_x 6 = \frac{1}{2}$ $x = 36$	20.) $\ln \left(\frac{1}{\sqrt[3]{e}} \right)$ $= -\frac{3}{2}$
21.) $\log_{81} 9$ $x = \frac{1}{2}$	22.) $\log_4 192 - \log_4 3$ $x = 3$	23.) $\log_2 4 + 3\log_2 2$ $x = 5$	24.) $\log^3 \sqrt{100}$ $x = \frac{2}{3}$
25.) $2\log_5 25 - \log_5 125$ $x = 1$	26.) $e^{\ln 6 - \ln 15 + \ln 20}$ $= 8$	27.) $\log_x 3 = \frac{1}{3}$ $x = 27$	28.) $\left(\frac{1}{10} \right)^{4\log 5}$ $= \frac{1}{625}$