Exponential and logarithmic functions – Practice problems

		Answers
1	The domain and range of $y = 2^x$ are _____. The horizontal asymptote is _____.	
2	Find the x and y intercepts of $y = 2^{x-2} - 8$. The horizontal asymptote is _____.	$x = 5; y = -\frac{31}{4}$ $y = -8$
3	If \$1000 is invested at 10% compounded twice a year, find the amount after 7 years.	\$1979
4	If \$1000 is invested at 10% compounded continuously, find the amount after 7 years.	\$2013
5	Solve for x: $9^{2x+1} = 27^{5x-1}$	$x = \frac{5}{11}$
6	Solve for x: $7^{3x+1} = 1$	$x = -\frac{1}{3}$
7	The domain and range of $y = \ln x$ _____. The vertical asymptote of $y = \ln x$ _____	$x > 0;$ $-\infty < y < \infty$ $x = 0$
8	The x and y intercepts of $y = \log_2(x+3) - 1$ are _____; the vertical asymptote is _____.	$x = -1$; $y = \log_2(3) - 1;$ $x = -3$
9	$3^{\log_3 x} =$; $\log_3 3^x =$.	x ; x
10	$\log_2 \frac{1}{16} =$	-4
11	$\log_3 \frac{1}{\sqrt{27}} =$	$-\frac{3}{2}$
12	$\log_{10}.0001 =$	-4
13	$\log_{.01} 1000 =$	$-\frac{3}{2}$
14	$\log_{\frac{1}{3}} \sqrt{27} =$	$-\frac{3}{2}$
15	$\log_7 1 =$	0
16	Expand: $\ln \frac{a^5\sqrt{b}}{c^3 d}$	$5\ln a + \frac{1}{2}\ln b$ $-3\ln c - \ln d$
17	Expand: $\ln \frac{\sqrt{x^2+1}}{\sqrt[3]{x^5-2}}$	$\frac{1}{2}\ln(x^2+1)$ $-\frac{1}{3}\ln(x^5-2)$
18	If $\ln x = 3$ and $\ln y = 2$, then $\ln \frac{x^3}{y^2} =$	5
19	Solve for x: $\log_3(2x+1) = 2$	4
20	A) Solve for x: $\log_2(2-x) - \log_2(x-3) = 3$ (*must check) B) Solve for x: $\log_2(x-2) - \log_2(3-x) = 3$ (*must check)	A)no solution B)$x = 26/9$
21	Solve for x: $2^{x+1} = 3^{4x}$	$\frac{\ln 2}{4\ln 3 - \ln 2}$
22	Solve for x: $(2)5^{2x+1} = 3^{x+2}$	$\frac{2\ln 3 - \ln 2 - \ln 5}{2\ln 5 - \ln 3}$