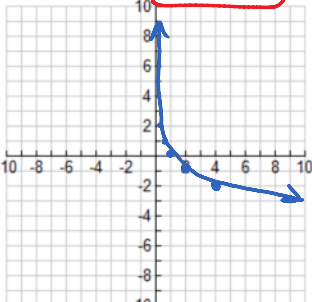


Advanced Algebra with Trig
Ch. 7 Yahtzee! Review – Solving with Logs and Exponentials

Name: Key
Period:

Question ***No Calculator***	Roll																						
<p>1. Solve for x:</p> <p>a. $3^{4x} = 27$ $3^{4x} = 3^3$ $4x = 3$ $x = 3/4$</p> <p>b. $\frac{3e^{3-x}}{3} = \frac{15}{3}$ $e^{3-x} = 5$ $3-x = \log_e 5$ $3-x = \ln 5$ $x = 1.391$</p> <p>c. $10^{-x+4} + 7 = 5$ $\frac{-7}{-7} \quad \frac{-7}{-7}$ $10^{-x+4} = -2$ $-x+4 = \log(-2)$ no solution</p>																							
<p>2. Solve for x:</p> <p>a. $9^{2x} = 3^{2x+4}$ $(3^2)^{2x} = 3^{2x+4}$ $4x = 2x + 4$ $2x = 4$ $x = 2$</p> <p>b. $25^{x-4} = 5^{3x+1}$ $(5^2)^{x-4} = 5^{3x+1}$ $2x - 8 = 3x + 1$ $-9 = x$</p> <p>c. $8^{x-1} = \left(\frac{1}{2}\right)^{2x-1}$ $(2^3)^{x-1} = (2^{-1})^{2x-1}$ $3x - 3 = -2x + 1$ $5x = 4$ $x = 4/5$</p>																							
<p>3. Solve for x:</p> <p>a. $\log_7(2-x) = \log_7 5x$ $2-x = 5x$ $\frac{2}{6} = \frac{6x}{6}$ $x = 1/3$</p> <p>b. $\log_2(3x-1) = 8$ $2^8 = 3x-1$ $256 = 3x-1$ $x = \frac{257}{3}$</p> <p>c. $4 + \log_9(3x-7) = 6$ $\log_9(3x-7) = 2$ $9^2 = 3x-7$ $81 = 3x-7$ $x = \frac{88}{3}$</p>																							
<p>4. Solve for x:</p> <p>a. $\ln(1-3x) + 3 = 9$ $\ln(1-3x) = 6$ $e^6 = 1-3x$ $403.429 = 1-3x$ $x = -134.14$</p> <p>b. $\log_2 2x + \log_2 x = 5$ $\log_2(2x^2) = 5$ $2^5 = 2x^2$ $32 = 2x^2$ $16 = x^2$ $4 = x$</p> <p>c. $\ln 3x - \ln 2 = 4$ $\ln\left(\frac{3x}{2}\right) = 4$ $\log_e\left(\frac{3x}{2}\right) = 4$ $e^4 = \frac{3x}{2}$ $54.598 = \frac{3x}{2}$ $x = 36.40$</p>																							
<p>5. Graph the following function: $y = \log_{1/2} x$</p> <p>$y = \left(\frac{1}{2}\right)^x$</p> <table border="1" data-bbox="186 1774 332 2005"> <tr><th>x</th><th>y</th></tr> <tr><td>-2</td><td>4</td></tr> <tr><td>-1</td><td>2</td></tr> <tr><td>0</td><td>1</td></tr> <tr><td>1</td><td>1/2</td></tr> <tr><td>2</td><td>1/4</td></tr> </table> <p>$y = \log_{1/2} x$</p> <table border="1" data-bbox="414 1774 560 2005"> <tr><th>x</th><th>y</th></tr> <tr><td>4</td><td>-2</td></tr> <tr><td>2</td><td>-1</td></tr> <tr><td>1</td><td>0</td></tr> <tr><td>1/2</td><td>1</td></tr> </table> <p>D: $(0, \infty)$ R: $(-\infty, \infty)$ asymptote: $x = 0$</p> 	x	y	-2	4	-1	2	0	1	1	1/2	2	1/4	x	y	4	-2	2	-1	1	0	1/2	1	
x	y																						
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2	-1																						
1	0																						
1/2	1																						

$$\begin{array}{c|c} 0 & 1 \\ 1 & \frac{1}{2} \\ 2 & \frac{1}{4} \end{array}$$

$$\begin{array}{c|c} 1 & 0 \\ \frac{1}{2} & 1 \\ \frac{1}{4} & 2 \end{array}$$

