## Bellwork Hon Alg 2 Monday, May 1, 2017

Solve each equation. Round to the nearest hundredth when necessary.

1. $41 - 8\text{Log}(x+1) = 9$

2. $10 + 2(9)^{5x} = 13$

3. $e^{x-2} - 7 = 1$

4. You invest $10,000 in an account that pays 5% interest each year. Find the number of years it will take your investment to reach $100,000. Round to the nearest tenth.

## Bellwork Hon Alg 2 Monday, May 1, 2017 Answers

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1. $41 - 8\text{Log}(x+1) = 9$

$-41 \quad -41$

$-8\text{Log}(x+1) = -32$

$\frac{-8}{-8} \quad \frac{-32}{-8}$

$\text{Log}(x+1) = 4 \rightarrow 10^4 = x+1$

$10{,}000 = x+1$

$-1 \quad -1$

$x = 9999$

2. $10 + 2(9)^{5x} = 13$

$-10 \quad -10$

$\frac{2(9)^{5x}}{2} = \frac{3}{2}$

$9^{5x} = 1.5$

$\log_9 1.5 = 5x$

$x = \left(\frac{\log 1.5}{\log 9}\right) \div 5$

$x = 0.04$

3. $e^{x-2} - 7 = 1$

$+7 \quad +7$

$e^{x-2} = 8$

$\ln 8 = x - 2$

$+2 \quad +2$

$x = \ln 8 + 2$

$x = 4.08$

4. You invest $10,000 in an account that pays 5% interest each year. Find the number of years it will take your investment to reach $100,000. Round to the nearest tenth.

$100 + 5 = 105\%$

$b = 1.05$

$\frac{10{,}000(1.05)^x}{10{,}000} = \frac{100{,}000}{10{,}000}$

$1.05^x = 10$

$\log_{1.05} 10 = x$

$x = \frac{\log 10}{\log 1.05}$

$x = 47.2 \text{ yrs}$