Bellwork Alg 2 Wednesday, May 15, 2019

1. Solve this equation to the nearest hundredth. $8 + 4(6)^{x-2} = 154$

2. Solve this equation to the nearest hundredth. $\log_2(x^2 - 7x) = 3$

3. The value of an piece of property has been decreasing 3.5% each year. Today, the property is worth $120,000.

a) Find the value of the property in 2025 if this trend continues.

b) Find the value of the property in 2010.

c) In how many years will the coin be worth $75,000? Round to the nearest tenth.

ANSWERS

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1. Solve this equation to the nearest hundredth. $8 + 4(6)^{x-2} = 154$

$-8 \quad -8$

$\frac{4(6)^{x-2}}{4} = \frac{146}{4}$

$6^{x-2} = 36.5$

$\log_6 36.5 = x - 2$

$2.01 = x - 2$

$+2 \quad +2$

$x = 4.01$

2. Solve this equation to the nearest hundredth. $\log_2(x^2 - 7x) = 3$

$2^3 = x^2 - 7x$

$8 = x^2 - 7x$

$-8 \quad -8$

$0 = x^2 - 7x - 8$

$0 = (x+1)(x-8)$

$x = 8, -1$

-8, -8, $+1$, -7

3. The value of an piece of property has been decreasing 3.5% each year. Today, the property is worth $120,000.

a) Find the value of the property in 2025 if this trend continues.

$100\% - 3.5\% = 96.5\%$

$b = .965$

$x = 2025 - 2019$

$x = 6$

$120{,}000(.965)^6$

$= \$96{,}904.76$

b) Find the value of the property in 2010.

$x = 2010 - 2019 = -9$

$120{,}000(.965)^{-9}$

$= \$165{,}361.89$

c) In how many years will the coin be worth $75,000? Round to the nearest tenth.

$\frac{75{,}000}{120{,}000} = \frac{120{,}000(.965)^x}{120{,}000}$

$0.625 = (.965)^x$

$\log_{.965}(0.625) = x$

$x = 13.2 \text{ yrs}$