

Algebra II Warm Up 1-3-15

Solve the following system of equations:

$$\begin{array}{r} 5x - 4y = 9 \\ -2(x - 2y) = -3 \end{array}$$

$$\begin{array}{r} 5x - 4y = 9 \\ -2x + 4y = 6 \end{array}$$

$$\frac{3x}{3} = \frac{15}{3}$$

$$x = 5$$

$$\begin{array}{r} -5 - 2y = -3 \\ -5 \quad -5 \\ \hline -2y = -8 \\ \frac{-2y}{-2} = \frac{-8}{-2} \\ y = 4 \end{array}$$

(5, 4)

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Today we are going to solve exponential functions.

$$y = ab^x$$

y = ending value
a = initial value
b = growth or decay (if %, change to decimal)
x = time

You buy an Xbox One for \$380. These gaming systems depreciate in value, they are only worth 80% of the original value each year. How much will this Xbox One be worth in 5 years?

$$y = 380(.80)^5$$

Put in calculator

$$y = \$124.52$$

80% = .80

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An acidophilus culture containing 150 bacteria doubles in population every hour. Predict the number of bacteria after 12 hours.

$$y = ab^x$$

$$y = 150(2)^{12}$$

Put in calculator

$$y = 614,400 \text{ bacteria}$$

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Compound Interest

A = ending value
P = Principal, starting amount
r = interest rate, decimal form
n = number of times a year
t = time in years

$$A = P \left(1 + \frac{r}{n} \right)^{nt}$$

You deposited \$1,000 in a bank account that pays 5% annual interest compounded quarterly. What is the balance after 6 years?

$$A = 1000 \left(1 + \frac{.05}{4} \right)^{4 \cdot 6}$$

Put in calculator exactly as you see it.

$$A = \$1347.35$$

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$$A = P \left(1 + \frac{r}{n} \right)^{nt}$$

You deposited $\underbrace{\$400}_P$ in a bank account that pays $\underbrace{10\%}_{.10 r}$ interest compounded monthly. What is the balance after $\underbrace{7}_{t}$ years?

$A = 400 \left(1 + \frac{.10}{12} \right)^{12 \cdot 7}$ put in calculator

$A = \$803.17$

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Conclusion

1. What does the a-value and P-value stand for?
 Beginning Value *Beginning Value*
2. How do we need to put interest rates in formulas? *As decimals*
3. Question???????

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Day 3

Word Problem for Exponential Formulas

Wkst

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