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Coordinate Algebra Linear and Exponential Functions NAME Disco Superfly W pd

Identify the initial value and ROC. The determine if linear or exponential. Then write equations and solve.

1. A plumber charges $75 per hour and a $50 service call fee. ROC is 75/hr so linear
   a) What is the charge for 4.25 hours?

$y = mx + b$ $y = 75(4.25) + 50 = \$368.75$

$y = 75x + 50$

2. Cats weigh 6 ounces at birth and gain 4 ounces per week. Linear
   a) How long since the cat's birth if it weighs 13.9 ounces?

$y = mx + b$ $13.9 = 4x + 6$ $x = 1.975$ weeks

$y = 4x + 6$ $7.9 = 4x$

3. The value of a home is currently $228,000 and increases at 4.7% per year.
   a) What is the value of the home after 3 years?

$y = a(b)^{\frac{x}{t}}$ $y = 228000(1.047)^{3}$ $= \$261682.63$

$y = 228000(1 + .047)^{\frac{x}{1yr}}$

4. Elizabeth has $758 in her ICarly piggy bank and she is saving $5 per week.
   a) How much does she have in her piggy bank after 52 weeks?

$y = mx + b$ $y = 5(52) + 758$

$y = 5x + 758$ $= \$1018$

5. I deposited $5700 into an account that pays 4.5% compounded quarterly. → $5700\left(1 + \frac{.045}{4}\right)^{\frac{12}{3\text{months}}}$
   a) How much is in the account after one year? (Think about how many "quarters" this is)

$y = a(b)^{\frac{x}{t}}$ $5700(1.0125)^{\frac{x}{3\text{months}}}$ $5700(1.0125)^{4}$

$\$5960.86$

6. Lali owes $375 and repays it at $20 per week.
   a) How long has he been repaying money if he still owes $75?

$y = mx + b$ $75 = -20x + 375$ OR $y = mx + b$ $-75 = 20x - 375$

$y = -20x + 375$ $-300 = -20x$ $y = 20x - 375$ $300 = 20x$

$15 = x$ 15 weeks $15 = x$ 15 weeks

7. Your great grandpa left you $83,000. You deposit into an account that pays 3.9% compounded quarterly.
   a) How much money is in the account (assuming you didn't use it to buy something) after 2 years?

$y = a(b)^{\frac{x}{t}}$ $83000\left(1 + \frac{.039}{4}\right)^{\frac{24\text{mos}}{3\text{mos}}}$ $= 83000(1.00975)^{8}$

$y = 83000\left(1 + \frac{.039}{4}\right)^{\frac{x}{3\text{mos}}}$ $\$89699.29$