

Exponential Applications Compound Interest

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

1. I bought a car for \$25,000, but its value is depreciating at a rate of 10% per year. How much will my car be worth after 8 years compounded quarterly?

$$25000 \left(1 - \frac{.10}{4} \right)^{4 \cdot 8} = \boxed{11119.56}$$

2. You invest \$2500 into a bank account for 5 years. If the bank offers 3.8% interest, how much will you have in the bank account if the bank compounds it:

3,612.49	A. Annually	$2500 \left(1 + \frac{.038}{1} \right)^{5 \cdot 1}$
3,022.91	B. Weekly	$2500 \left(1 + \frac{.038}{52} \right)^{5 \cdot 52}$
3,022.22	C. Monthly	$2500 \left(1 + \frac{.038}{12} \right)^{5 \cdot 12}$
3,020.41	D. Quarterly	$2500 \left(1 + \frac{.038}{4} \right)^{5 \cdot 4}$

3. The number of mosquitoes at the beach has tripled every year since 1999. In 1999, there were 2,500 mosquitoes. Write a model for this situation. How many mosquitoes would you predict were at the beach in 2005?

$$2,500 (3)^6 = \boxed{1822500}$$