

Homework #5

A new automobile costs \$32,000. The value of the same automobile after t years is given by $V = 32000(0.8)^t$. The following steps determine how many years it will take for the value to decrease to one-eighth the initial value, which is \$4,000.

- 1) we need to compute $(0.8)^t = 1/8$, so we take logarithm of base 10 on both side: write out the result.
- 2) using the fact that $\log_{10}2 = 0.3010$, compute $\log_{10}8$. [hint: $2^3 = 8$]
- 3) use the result of $\log_{10}8$, compute $\log_{10} (1/8)$. [hint: $1/8 = 8^{-1}$]
- 4) use the result of $\log_{10}8$, compute $\log_{10}0.8$ [hint: $0.8 = 8/10$]
- 5) use the result of 3) and 4), solve for t in 1)

Reminder: homework turned in before or on the specified due date and time, in class or submitted through Blackboard, depending on the circumstance, are eligible for 100% of the grade. If you choose to turn in after the due date and time passes, for the first 24 hour period after the due date and time, your assignment will be eligible for 67% of the full grade; for the second 24 hour period after the due date and time, your assignment will be eligible for 33% of the full grade; for the third 24 hour period or later after the due date and time, your assignment will be eligible for 0% of the full grade.