

1. In Example 2, a model for the US population is given. Use this model to approximate, to the nearest million, the population of our country in 2050. _____
2. For Example 2, use logarithms to determine the value of t for which $P = 300$. Report your answer **exactly** (involving a logarithm) as well as an approximation accurate to 2 decimal places. Show work, as done on page 160:

Exact answer:

Approximate answer:

3. The mathematical model in Example 2 gave t in years since Jan.1, 2006. What month does the model predict that $P = 300$? _____
 Note: The US population officially celebrated turning 300 million on October 17, 2006.
4. (Select one) The doubling time of a quantity is ...
 - the time it takes for the quantity to grow by 50%
 - the time it takes for the quantity to grow by 100%
 - the time it takes for the quantity to grow by 200%
 - the value of the quantity after twice the amount of time has passed.
5. Look at the graph of the function $P = 25(1.075)^t$ in Problem 31 on page 158 of Section 4.1 Use the graph to estimate the doubling time of P . $t =$ _____
6. Look at the graph of the function $Q = 10e^{0.15t}$ in Problem 32 on page 158 of Section 4.1 Use the graph to estimate the half-life of Q . $t =$ _____
7. Read Example 12 on page 163 in Section 4.2 very carefully. Why didn't they solve it using logs? Pick the best answer.
 - they could have, but the authors preferred to use the graphical approach instead.
 - it is not possible to solve this problem with logs.
 - they were just plain lazy
 - the problem cannot be solved by any method. There is no solution.
 - it would have required taking the logarithm of 0 which is undefined.