

**Problem 1.** Write the function  $P = 11e^{0.38t}$  in the form  $P = P_0a^t$ . Is this exponential growth or exponential decay?

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**Problem 2.** Put the function  $P = 16(15)^t$  in the form  $P = P_0e^{kt}$ . Do not use your calculator—provide an exact answer.

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**Problem 3.** Put the function  $P = 12(1.8)^t$  in the form  $P = P_0e^{kt}$ . Do not use your calculator—provide an exact answer.

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**Problem 4.** Put the function  $P = 160(0.44)^t$  in the form  $P = P_0e^{kt}$ . Do not use your calculator—provide an exact answer.

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**Problem 5.** A quantity  $P$  is an exponential function of time  $t$ , such that  $P = 60$  when  $t = 4$  and  $P = 90$  when  $t = 3$ . Use the given information about the function  $P = P_0e^{kt}$  to:

- Find values for the parameters  $k$  and  $P_0$  (round your answers to three decimal places).
- State the initial quantity and the continuous percent rate of growth or decay. Round your answer for the initial quantity to three decimal places. Is the quantity growing or decaying?