A study is done on the population of a certain fish species in a lake. Suppose that the population size $P(t)$ after t years is given by the following exponential function.

$P(t) = 370(1.32)^t$

I

Find the initial population size. 370
Does the function represent growth or decay? growth / decay
By what percent does the population size change each year? % 32%

$1.32 = 1 - r$
$-1 \quad -1$
$.32 = r$

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Notes 4.5 & 4.6

solve for x

$\log_2 x = -3$

$\log_a x = y$

$a^y = x$

$2^{-3} = x$

$x = \frac{1}{2^3}$

$x = \frac{1}{8}$

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Evaluate

(a) $3\cancel{\ln e}^{4} + \cancel{\ln e}^{-17} = \square$

$3(4) + -17$

$12 + -17 = -5$

(b) $\log_2 20 - \log_2 5 = \square$

$\log \frac{m}{n} = \log m - \log n$

$\log_2 \frac{20}{5}$

$a^y = x$

$\log_2 4 = y$

$2^y = 4$

$y = 2$

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$3 + \ln(x-3) = 5$
$-3 \qquad\qquad -3$

$e^{\ln(x-3)} = e^2$

2nd Ln

$x - 3 = e^2$
$+3 \qquad +3$

$e^2 + 3$

$x = e^2 + 3$

$x = 10.39$

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Solve for x

$7^{x-9} = 11^{5x}$

$2^{x} = 2^{2x-3}$

$2^x = 4^2$

$\log 7^{x-9} = \log 11^{5x}$

$(x-9)\log 7 = 5x \log 11$

$x\log 7 - 9\log 7 = 5x\log 11$
$+9\log 7 \quad -5x\log 11$

$x\log 7 - 5x\log 11 = 9\log 7$

$x(\log 7 - 5\log 11) = 9\log 7$

$x = \frac{9\log 7}{\log 7 - 5\log 11}$

$9\log 7 \div (\log 7 - 5\log 11)$

$x = -1.744$

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$v(t) = 74 - 74e^{-.22t}$

61 m/s

$61 = 74 - 74e^{-.22t}$
$-74 \quad -74$

$\frac{-13}{-74} = \frac{-74e^{-.22t}}{-74}$

$\frac{13}{74} = e^{-.22t}$

$\ln\frac{13}{74} = \cancel{\ln e}^{-.22t}$

$\frac{\ln\frac{13}{74}}{-.22} = \frac{-.22t}{-.22}$

$t = \frac{\ln\frac{13}{74}}{-.22}$

$t = 7.9\text{sec}$

Oct 14-9:53 AM

Continuous exp growth

4.6% per hr

double?

$A = pe^{rt}$

$2p = pe^{rt}$

$2 = e^{rt}$

$2 = e^{.046t}$

$\ln 2 = \cancel{\ln e}^{.046t}$

$\ln 2 = \frac{.046t}{.046}$

$t = \frac{\ln 2}{.046}$

$t = 15.07$

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$A = Pe^{rt}$

$y = y_0 e^{rt}$

$2y_0 = y_0 e^{.025t}$

$2 = e^{.025t}$

$y = y_0 e^{.025t}$

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