Name: Answers Date: _____

Homework: Applications of Exponential & Logarithmic Equations Honors PreCalculus

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Textbook Page 300 Problems 119, 123, 124
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Page 325 Problems 41, 43, 45, 49, 51, 55

p. 300 119) $p(h) = 760e^{-.145h}$

a) $p = 320$
$320 = 760e^{-.145h}$
$.421 = e^{-.145h}$
$\ln(.421) = -.145h$
$-.865 = -.145h$
$5.965 \text{ km} = h$

b) $p = 667$
$667 = 760e^{-.145h}$
$.878 = e^{-.145h}$
$\ln(.878) = -.145h$
$-.1301 = -.145h$
$.897 \text{ km} = h$

123) $D = 5e^{-.4h}$
$D = 2 \quad 2 = 5e^{-.4h}$
$.4 = e^{-.4h}$
$\ln(.4) = -.4h$
$-.916 = -.4h$
$2.291 = h$
So, about 2hr. 17min

124) $N = P(1 - e^{-.15d})$
$N = 450 \quad P = 1000$
$450 = 1000(1 - e^{-.15d})$
$.45 = 1 - e^{-.15d}$
$-.55 = -e^{-.15d}$
$.55 = e^{-.15d}$
$\ln(.55) = -.15d$
$-.598 = -.15d$
$d = 3.986 \text{ days}$

p. 317 99) $V(t) = 16500(.82)^t$

a) $9000 = 16500(.82)^t$
$.5455 = .82^t$
$\log_{.82} .5455 = t$
$3.054 \text{ years} = t$

b) $4000 = 16500(.82)^t$
$.2424 = .82^t$
$\log_{.82} .2424 = t$
$7.141 \text{ years} = t$

c) $2000 = 16500(.82)^t$
$.1212 = .82^t$
$\log_{.82} .1212 = t$
$10.634 \text{ years} = t$

p. 325

$A=Pe^{rt}$ $A=P(1+\frac{r}{n})^{nt}$

41) $A=Pe^{rt}$

$A=25000$
$P=10000$
$r=.06$

$25000=10000e^{.06t}$

$2.5=e^{.06t}$

$\ln 2.5=.06t$

$.916=.06t$

15.272 years $=t$

43) $A=P(1+\frac{r}{n})^{nt}$

$A=?$
$P=90000$
$r=.03$
$n=1$
$t=5$

$A=90000(1+\frac{.03}{1})^{(1)(5)}$

$A=90000(1.03)^5$

$A=\$104334.67$

45) $A=Pe^{rt}$

$A=15000$
$P=?$
$r=.05$
$t=3$

$15000=Pe^{.05(3)}$

$\frac{15000}{e^{.15}}=\frac{Pe^{.15}}{e^{.15}}$

$\$12910.62=P$

49) $A=Pe^{rt}$

$A=?$
$P=1000$
$r=.056$
$t=1$

$A=1000e^{.056(1)}$

$A=\$1057.60$

No, he will not have enough to buy the computer.

$A=P(1+\frac{r}{n})^{nt}$

$A=?$
$P=1000$
$r=.059$
$n=12$
$t=1$

$A=1000(1+\frac{.059}{12})^{12(1)}$

$A=1000(1.0049)^{12}$

$A=\$1060.62$

Yes, he would have enough to buy the computer.

51) Will

$A=P(1+\frac{r}{n})^{nt}$

$A=?$
$P=2000$
$r=.09$
$n=2$
$t=20$

$A=2000(1+\frac{.09}{2})^{2(20)}$

$A=2000(1.045)^{40}$

$A=\$11632.73$

Henry

$A=Pe^{rt}$

$A=?$
$P=2000$
$r=.085$
$t=20$

$A=2000e^{.085(20)}$

$A=\$10947.89$

Will has more money.

55) $A=P(1+\frac{r}{n})^{nt}$

$A=?$
$P=787$
$r=.013$
$n=2$
$t=20$

$A=787(1+\frac{.013}{2})^{2(20)}$

$A=787(1.0065)^{40}$

$A=1019.83$

in 2029 it would have to pay back $1019.83 billion

Interest:

1019.83
− 787

232.83 billion