Correcting Review: Thursday Feb.23rd

Today's Learning Goal(s):

By the end of the class, I will be able to:

a) review all ideas for the unit summative.

Yesterday's work

pp. 393-394 #1, 3-6, 7b, 8, 10(a,b)
Challenge Problem #15

Please submit the homework sheet 1.8.2, with your name on the top.

p.394 #10

10. Radioactive tritium has a half-life of 12 years. A sample of this material has a mass of 1000 g. An equation that models the mass, m grams, remaining after t years is $m = 1000(0.9439)^t$.

a) How much radioactive tritium remains after 100 years?

b) How long does it take until only 100 g of the radioactive tritium remain?

c) Pose a problem about radioactive tritium. Solve the problem you posed.

a) $m = 1000(0.9439)^t$

$= 1000(0.9439)^{100}$

$\doteq 3.10884$

vs $m = 1000(0.5)^{\frac{t}{12}}$

$= 1000(0.5)^{\frac{100}{12}}$

$\doteq 3.10039$

b) $100 = 1000(0.9439)^t$

$\frac{100}{1000} = 0.9439^t$

$0.1 = 0.9439^t$

$\log 0.1 = t \log 0.9439$

$\frac{\log 0.1}{\log 0.9439} = t$

$t \doteq 39.88$

p.394 #15

15. Two historical purchases of land in North America are given. In each case, if the money had been invested at 6% compounded annually, what would its value be today? → 2002

a) In 1867, the United States purchased Alaska from Russia for $7 200 000.

b) In 1626, Manhattan Island was sold for $24.

$A = ?$

$P = 7.2$

$i = 0.06$

$n = 135$

$A = P(1+i)^n$

$= 7.2(1+.06)^{135}$

$\doteq 18,776.917$

$\doteq 18.8$ Billion

$24(1.06)^{376}$

$= 7.85 \times 10^{10}$

78,500,000,000

Corrections done on Wed. Feb.22nd

Before we begin, are there any questions from last day's work?

pp.352-353 #1(a,c),2(i,iii),3(a,b,c),4(a,b),5(a,b,c),[blue](a,b,d),9(b,c)

5b) $1000 find when doubles if 7.2% /a comp. semi-annually

$A = P(1+i)^n$

$A = 2000$

$P = 1000$

$i = \frac{0.072}{2}$

$n = 2n$

$\frac{2000}{1000} = \frac{1000(1+\frac{0.072}{2})^{2n}}{1000}$

$2 = (1.036)^{2n}$

$\log 2 = 2n \log 1.036$

$\frac{\log 2}{2\log 1.036} = n$

$n \doteq 9.79$

the money will double in 9.8 years

8 Blue 2.5% /m

a) $P = 100(0.975)^d$

b) $50 = 100(0.975)^d$

$0.50 = 0.975^d$

$\log 0.50 = d \log 0.975$

$d = \frac{\log 0.5}{\log 0.975}$

$\div 27.37$

$\div 27.4$

$100\% \pm r$

$100\% - 2.5\%$

$= 97.5\%$

$= 0.975$

d) $1 = 100(0.975)^d$

$0.01 = 0.975^d$

$d \div 181.89$

9b) $\frac{1}{2}$ life = 20 weeks

25 g → 14 weeks?

$P = P_0(r)^x$

$= (25)(0.5)^{\frac{14}{20}}$

$\div 15.38$

$\div 15.4$ g