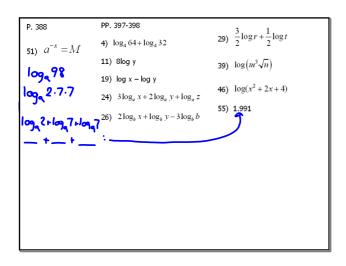
U4D7.notebook November 27, 2018





Nov 15-2:56 PM Nov 10-11:11 AM

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Compounded Interest: A = P\left(1 + \frac{r}{n}\right)^{n}

P = principal (amount invested)

A = Amount after t years

e = Euler's number

Compounded Continuously: A = Pe^{rt}

r = rate as a decimal

t = number of years

n = number of compounds per year
```

```
1. If $5000 is invested at 6.5% annual interest rate, how much will you have after 3½ years if the money is compounded:

a. Annually 0.2 3.5 b. Quarterly 0.2 4(3.5)

A. 5000 (1+.065) A. $6265.82

c. Monthly 0.12 d. Continuously A.P. 1

A: 5000 (1+.065) A. $6265.82

A: 5000 (1+.065) A. $6267.29

A: $6277.29
```

Nov 10-9:00 AM Nov 10-9:02 AM

```
3. If you put $5000 in an account that pays interest quarterly, what interest rate must you receive in order to have $7500 after 5 years?

7500: 5000(1+\frac{C}{4})^{20}

7500: [(1+\frac{C}{4})^{20}]^{20}

7500: [(1+\frac{C}{4})^{20}]^{20}

8.276

1.02: [1+\frac{C}{4}]^{20}

1.02: [1+\frac{C}{4}]^{20}

7:.0819
```

Nov 28-10:30 AM Nov 10-9:03 AM

1

Nov 10-9:03 AM

The mass of a radioactive element at time t is given by
$$A = A_0 \left(\frac{1}{2}\right)^{\frac{1}{h}}$$
Where Ao is the initial mass and h is the half-life of the element.

5. After 43 years, a 20-milligram sample of strontium-90 ($^{\infty}$ Sr) decays to 6.071 mg. What is the half-life of strontium-90? Ah: ?

$$\frac{6.071}{20}: 20 \left(\frac{1}{2}\right)^{\frac{1}{2}}$$

$$\frac{6.071}{20}: (\frac{1}{2})^{\frac{1}{2}}$$

$$\frac{10g\left(\frac{6.071}{20}\right)}{10g\left(\frac{1}{2}\right)}: \frac{43}{h} |og\left(\frac{1}{4}\right)|$$

$$\frac{10g\left(\frac{6.071}{20}\right)}{10g\left(\frac{1}{2}\right)}: \frac{43}{h} |og\left(\frac{1}{4}\right)|$$

$$\frac{1.72}{1.72}: \frac{43}{h}$$

$$\frac{1.72h: 43}{1.72}: \frac{43}{1.72}$$

$$\frac{1.72}{1.72}: \frac{1}{1.72}$$

Nov 10-9:03 AM

6. When a living organism dies, its carbon-14 decays. The half-life of carbon-14 is 5730 years. If the skeleton of a mastodon has lost 58% of its original carbon-14, when did the mastodon die? (to the nearest hundred years)
$$\div : \underbrace{1}_{58} \cdot 42 : 1 \cdot \binom{1}{12} \cdot 5730 \cdot \binom{1}{109} \cdot \binom{1}{12} \cdot \frac{1}{109} \cdot \binom{1}{12} \cdot \binom{1}{1$$

Nov 10-9:03 AM

Nov 27-7:20 AM