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 17 (misc) 10/27  
 Civil engineering

$\phi = xyz^3 + xiy^2z^2$   
 Command window  
 clear  
 clc

Syms x, y, z

$$F = k \cdot x \cdot y \cdot z^3 + x^2 \cdot y^2 \cdot z^2$$

d - diff (F, x)

d - diff (F, y)

d - diff (F, z)

s - m (M, x, z, y, z, z -- e)

$$-2t = \ln 0.25$$

$$\therefore A = \frac{\ln 0.25}{2} = 0.14384$$

$$N(t) = 100 e^{-0.144t}$$

The half life period of a radioactive material is the time delay to one half of the initial value of the material.

to calculate half life

$$N(t) = \frac{N_0}{2} = N_0 e^{-At}$$

$$N(t) = \frac{100}{2} = 100 e^{-0.144t}$$

$$N(t) = 50 = 100 e^{-0.144t}$$

$$0.5 = e^{-0.144t}$$

$$\ln 0.5 = -0.144t$$

$$-0.144t = -0.693$$

$$t = \frac{0.693}{0.144} = 4.8125$$