Question 1 (40 pts)

After 3 days, a sample of radon-222 decayed to 58% of its original amount. What is the half life of radon-222?

Question 2 (30 pts)

Suppose the population develops according to the logistic equation \( \frac{dP}{dt} = 0.05P - 0.0005P^2 \) where \( t \) is measured in weeks. What is the carrying capacity (K)? What is the value of k?
Question 3 (30 pts)

Solve the initial value problem, \( y' + (\cos x)y = \cos x \), \( y(0) = 0 \)