ASSIGNMENT STAT-408

Solve the following questions:

Question: 1

The population of a community is known to increase at a rate proportional to the number of people present at time t. If an initial population P_0 has doubled in 5 years, how long will it to triple? To quadruple?

Question: 2

Suppose it is known that the population of the community in question 1 is 10,000 after 3 years. What was the initial population P_o? What will the initial population in 10 years? How fast is the population growing at t=10?

Question: 3

Solve the following differential equation:

a) $\frac{dy}{dx} = -y$ answer: $y = ce^{-x}$

b) $ydx + xdy = 0$ answer: $xy = c$

c) $\frac{dy}{dx} = \frac{1-x}{y}$ answer: $y^2 = x(2-x) + c$

d) $\frac{dy}{dx} = \frac{y}{x^2}, (y > 0)$ answer: $y = ce^{-\frac{1}{x}}$