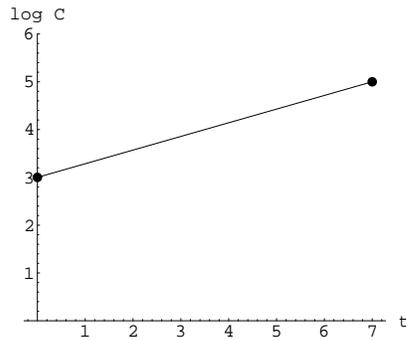


(d) What effect does a 1 point increase on the Richter scale have on the intensity of an earthquake?

2. An environmental policy advisory board is studying information supplied to them concerning pollution levels in one of India's rivers. The data have been presented as follows.



On the vertical axis is the log of the number of coliform organisms per 100 mL of water, and on the horizontal axis is time, measured in years from the date the study of the river began. The data look more or less like a line passing through the points $(0, 3)$ and $(7, 5)$. This kind of presentation, plotting the logarithm of some quantity instead of plotting the quantity itself, is a **semilog plot**.

- (a) Find a formula for $C(t)$, the number of coliform organisms per 100 mL of water as a function of time.

- (b) Show that if a quantity grows according to the equation $y = Ce^{kt}$, then $\ln y$ is a linear function of t . (Thus, if a quantity grows exponentially, its semilog plot will be a straight line.) What is the significance of the slope of this line? The vertical intercept of the line?