

a) $y(t) = \text{amount of bacteria}$
 $y(0) = 20$

From $y = Ce^{kt}$
 $20 = Ce^{k \cdot 0}$
 $20 = \underline{\underline{C}}$

$$y = 20e^{kt}$$

at $t=0 \rightarrow 20$
 $t = 5 \text{ hrs} \rightarrow 40$

$$40 = 20e^{k \cdot 5}$$
$$40 = 20e^{5k}$$
$$2 = e^{5k}$$

$$5k = \ln 2$$

$$k = \frac{\ln 2}{5} = 0.1386$$

$$y = 20e^{0.1386t}$$

Particular solution

$$6 \ln 1\frac{1}{2} \text{ days} = 36 \text{ hrs}$$

$$y = 200 \times 0.1386 \times 36$$

$$\approx 2396$$