

Answer on Question#39669 – Math - Calculus

a. For example, let $r(t) = 18e^{0.05t}$. Then we can find the formula for the total number of cases of flu if find the indefinite integral:

$$R(t) = \int r(t)dt = \int 18e^{0.05t} dt = 18 \int e^{0.05t} dt = \frac{18}{0.05} e^{0.05t} + C = 360e^{0.05t} + C$$

The constant C we can find using the condition:

$$R(0) = 5$$

$$360 \cdot e^{0.05 \cdot 0} + C = 5$$

$$360 + C = 5$$

$$C = 355$$

So

$$R(t) = 360e^{0.05t} - 355$$

b. Let's find the total number of cases in the first 20 days:

$$R(t = 20) = 360 \cdot e^{0.05 \cdot 20} - 355 = 360 \cdot e^1 - 355 \approx 624$$

Answer:

- a.** $360e^{0.05t} - 355$;
- b.** About 624 cases.