

63.

Find antiderivative of $\frac{1}{t}$

$$\text{General A.D.} = \ln|t| + C$$

$$\text{When } t=1, N(1)=10.$$

$$\therefore 10 = \ln|1| + C$$

$$10 = 0 + C \quad \Rightarrow \quad \boxed{C = 10.}$$

$$\therefore \text{Particular A.D.} = \boxed{\ln|t| + 10}$$

69.

$\sin(\pi t)$

$$\text{general A.D.} = -\frac{1}{\pi} \cos(\pi t) + C$$

$$\text{When } t=0, \text{ value} = 3.$$

$$\therefore 3 = -\frac{1}{\pi} \cos(\pi \cdot 0) + C$$

$$= -\frac{1}{\pi} \cos(0) + C = -\frac{1}{\pi} + C$$

$$\therefore C = 3 + \frac{1}{\pi}$$

$$\therefore \text{Particular A.D.} = \boxed{-\frac{1}{\pi} \cos(\pi t) + 3 + \frac{1}{\pi}}$$