

SOLVE THE FOLLOWING DE'S:

① $y' + y = e^{-x}$

② $y' + \frac{y}{x} = 3x + 4$

③ $y' + \frac{2y}{x} = 4x + 3$

④ $xy' - y = x^3 \ln x$

⑤ $xy' - 2y = x^4 \sin x$

FIND THE PARTICULAR SOLUTION OF THE DE WHOSE GRAPH PASSES THROUGH THE GIVEN POINT:

⑥ $y' + y = 6e^x, (0, 3)$

⑦ $y' + 3x^2 y = 3x^2, (0, 6)$

⑧ $xy' - 2y = -x^2, (1, 5)$

⑨ $x^2 y' - 4xy = 10, (1, 10)$

⑩ $y' - 6xy = 36x e^{5x^2}, (0, 5)$

⑪ $y' = x \cos \frac{x}{2} + \frac{y}{x}, (\pi, 6\pi)$

⑫ SOLVE THE LOGISTIC GROWTH DE $\frac{dN}{dt} = rN \left(1 - \frac{N}{K}\right)$ AS FOLLOWS:

a) Let $N = \frac{1}{y}$, so $\frac{dN}{dt} = -\frac{1}{y^2} \cdot \frac{dy}{dt}$,

TO GET A DE IN TERMS OF y AND t
(WHICH IS LINEAR AND SEPARABLE),b) SOLVE THIS DE FOR y , AND THEN FIND N .