10. Find current, one in Circuit $R = 8, L = 2$ and $E = 9 \cos t$,

11. Find $y'' + 2y' + y = e^{-x}$, $y(0) = -1, y'(0) = 1$

12. $y'' + 4y = \sin 3x$

13. $y'' - y' - 2y = 3e^{2x}$

14. $y'' - 4y' + 4y = \frac{e^{2x}}{x}$

15. $y'' + 9y = \sec 3x$

16. $y'' + y = \sec x$

17. $(D^2 + 4D + 4)y = \frac{2e^{-2x}}{x^2}$

Find Power Series Solution

① $y' = -2xy$ ② $y' - y = 0$

③ $(x-2)y' = xy$ ④ $y'' - 3y' + 2y =$

Solve the Differential eqn

1. $(y\cos xy + \sin xy + y)\,dx + (\sin x + x\cos xy + x)\,dy = 0$
2. $e^y\,dx + (xe^y + 2y)\,dy = 0$
3. $(x^2y^2 + xy + 1)\,y\,dx + (x^2y^2 - xy + 1)\,x\,dy = 0$
4. $(x^2 + y^2)\,dx - 2xy\,dy = 0$
5. $(3x^2y^4 + 2xy)\,dx + (2x^3y^3 - x^2)\,dy = 0$
6. Find Diff equation whose solution is
(a) $y = e^{2x}c_1 + c_2e^{-2x}$ (b) $y = c_1e^x + xe^xc_2$
7. $y' + 4xy = -xy^3$
8. State Newton law of Cooling; and

If temperature of an object at $t = 0$ is $32^\circ F$, $t = 2$ it increase to $61^\circ F$, Surrounding temperature is $27^\circ F$ find temperature of the object at $t = 10$

9. Let $p(t)$ be the population at any time t; at $t = 0$ $p(t) = 50$ million Find $p(t)$ at $t = 10$, Using Malthus law of population.