EJERCICIOS DE EDO HOMOGÉNEAS:

1) $(x+y)dx+(y-x)dy=0$

2) $\left[ycos\left({}^{y}/_{x}\right)+xsen\left({}^{y}/_{x}\right)\right]dx=xcos\left({}^{y}/_{x}\right)dy$

3) $x(lnx-lny)dy-y\,dx=0$

4) $xdx+(y-2x)dy=0$

5) $x+y\frac{dy}{dx}=2y$

6) $3x^2\frac{dy}{dx}=2x^2+y^2$

Resolver las siguientes Ecuaciones Diferenciales:

1. $(x^2+y^2)dx+(x^2-xy)dy=0$ Rpta: $c(x+y)^2=xe^{y/x}$
2. $(2\sqrt{\mathbf{xy}}-y)dx-xdy=0$ Rpta: $\sqrt{\mathbf{xy}}-x=c$
3. $2x^3ydx+(x^4+y^4)dy=0$ Rpta: $3x^4y^2+y^6=c$
4. $xdy-ydx=\sqrt{\mathbf{x^2+y^2}}\,dx$ Rpta: $y+\sqrt{\mathbf{x^2+y^2}}=cx^2$
5. $-ydx+(x+\sqrt{\mathbf{xy}})dy=0$ Rpta: $\mathrm{Ln}\left|\mathbf{y}\right|=2\sqrt{\mathbf{x}/\mathbf{y}}+c$
6. $(x^2-y^2)y'=xy$ Rpta: $x^2=-2y^2\mathrm{Ln}\left|\mathbf{cy}\right|$
7. $x\mathrm{Cos}(y/x).dy/dx=y\mathrm{Cos}(y/x)-x$ Rpta: $x=e^{-\mathrm{Sen}(y/x)}$

8. $y\frac{dx}{dy} = x + 4ye^{-2x/y}$ Rpta: $e^{2x/y} = 8Ln|y| + c$

9. $(yCos(y/x) + xSen(y/x))dx = xCos(y/x)dy$ Rpta: $x = cSen(y/x)$

10. $y' = \frac{(-x + \sqrt{x^2 + y^2})}{y}$ Rpta: $y^2 = 2cx + c^2$

11. $(y + xCotg(y/x))dx - xdy = 0$ Rpta: $xCos(y/x) = c$

12. $(x^2 + xy - y^2)dx + xydy = 0$ Rpta: $y + x = cx^2e^{y/x}$

13. $\frac{dy}{dx} = \frac{y}{x} + \frac{x}{y}$ Rpta: $\left(\frac{y}{x}\right)^2 = 2Ln(x) + c$

14. $(x + \sqrt{xy})\frac{dy}{dx} + x - y = x^{-1/2}.y^{3/2}$;Y(1) = 1 Rpta: $3x^{3/2}Ln|x| + 3x^{1/2}.y + 2y^{3/2} = 5x^{3/2}$

15. $(\sqrt{x^2 - y^2}$ - $yArcsen(y/x))dx + Arcsen(y/x)dy = 0$ Rpta: $Ln|x| + ½(Arcsen(y/x))^2 = c$

16. $y' = e^{y/x} + y/x$ Rpta: $y = -xLn[Ln|c/x|]$

17. $xy' = y(Ln(y) - Ln(x))$ Rpta: $Ln\left|\frac{y}{x}\right| = 1 + cx$

18. $(y^2 + yx)dx - x^2dy = 0$ Rpta: $x + yLn|x| = cy$

19. $(2xTg(y/x) + y)dx = xdy$ Rpta: $x^2 = cSen(y/x)$

20. $(ySen(y/x) + xCos(y/x))dx - xSen(y/x)dy = 0$ Rpta: $xCos(y/x) = c$

21. $xCos(y/x)(ydx + xdy) = ySen(y/x)(xdy - ydx)$ Rpta: $xyCos(y/x) = c$

22. $(x(x^2 + y^2))dy = y(x^2 + y\sqrt{x^2 + y^2} + y^2)dx$ Rpta: $y + \sqrt{x^2 + y^2} = cx^2 e^{\frac{\sqrt{x^2+y^2}}{y}}$

23. $(x - yArctg(y/x))dx + xArctg(y/x)dy = 0$ Rpta: $2yArctg(y/x) = xLn\left|\frac{c^2(x^2 + y^2)}{x^4}\right|$

24. $(x - y)dx + (3x + y)dy = 0$;$Y(2) = 1$ Rpta: $2(x + 2y) + (x + y)Ln(x + y) = 0$

25. $\frac{dy}{dx} = \frac{xy}{x^2 - xy + y^2}$ Rpta: $(x - y)e^{x/y} = c$

26. $x\frac{dy}{dx} - y = \sqrt{x^2 + y^2}$ Rpta:

27. $(x^4 + y^4)dx - 2x^3ydy = 0$ Rpta:

28. $\frac{dy}{dx} = \frac{y}{x} + \frac{x^2}{y^2} + 1$ Rpta: $\frac{y}{x} - Arctg(y/x) = Ln(x) + c$

29. $(x^2e^{-y/x} + y^2)dx = xydy$ Rpta:

30. $(x^2 + xy + 3y^2)dx - (x^2 + 2xy)dy = 0$ Rpta:

31. $\frac{dy}{dx} = \frac{y}{x}Ln\left(\frac{y}{x}\right)$ Rpta: $Ln\left(\frac{y}{x}\right) = 1 + cx$

32. $xdx + (y - 2x)dy = 0$ Rpta: $(x - y)Ln|x - y| = y + c(x - y)$

33. $3x^2y' = 2x^2 + y^2$ Rpta: $(y - 2x)^3 = cx(y - x)^3$

34. $y' = e^{y/x} + y/x + 1$ Rpta: $e^{y/x} = cx(e^{y/x} + 1)$

35. $[2xSenh(y/x) + 3yCosh(y/x)]dx - 3xCosh(y/x)dy = 0$ Rpta:

36. $2\dfrac{dy}{dx} = -\dfrac{y + 4\sqrt{x}}{x - 2y\sqrt{x}}$;hacer $u = \sqrt{x}$ Rpta: $2x + y\sqrt{x} - y^2 = c$

Resuelva la ecuación diferencial dada, sujeta a la condición inicial que se indica:

37. $xy^2\dfrac{dy}{dx} = y^3 - x^3$;$Y(1) = 2$ Rpta: $y^3 + 3x^3Ln|x| = 8x^2$

38. $2x^2y' = 3xy + y^2$;$Y(1) = -2$ Rpta: $y^2 = 4x(x + y)^2$

39. $(x + ye^{y/x})dx - xe^{y/x}dy = 0$;$Y(1) = 0$ Rpta: $Ln|x| = e^{y/x} - 1$

40. $(y^2 + 3xy)dx = (4x^2 + xy)dy$;$Y(1) = 1$ Rpta: $4x.Ln\left|\dfrac{y}{x}\right| + xLn|x| + y - x = 0$

41. $y^2dx + (x^2 + xy + y^2)dy = 0$;$Y(0) = 1$ Rpta $(x + y)Ln|y| + x = 0$

42. $(x + \sqrt{y^2 - xy})y' = y$;$Y(1/2) = 1$ Rpta: $Ln|y| = -2(1 - x/y)^{1/2} + \sqrt{2}$

43. $xydx - x^2dy = y\sqrt{x^2 + y^2}\,dy$;$Y(0) = 1$ Rpta:

44. $ydx + (y.Cos(x/y) - x)dy = 0$;$X(2) = 0$ Rpta:

45. $ydx + x(Ln(x) - Ln(y) - 1)dy = 0$;$Y(1) = e$ Rpta:

46. $(\sqrt{x} + \sqrt{y})^2dx = xdy$;$Y(1) = 0$ Rpta:

47. $\frac{dy}{dx} - \frac{y}{x} = \text{Cosh}\left(\frac{y}{x}\right)$;Y(1) = 0 Rpta:

48. $y^3dx = 2x^3dy - 2x^2ydx$;Y(1) = $\sqrt{2}$ Rpta: