Ecuaciones Diferenciales Ordinarias de primer Orden

1. $2y' + 4y = 0$ R: $y = ce^{-2x}$

2. $x^2dy - cos^2ydx = 0$ R: $\text{tg}(y) + \frac{1}{x} = c$

3. $y' = x^2 + x^2y^2$ R: $y = \text{tg}\left(\frac{1}{3}x^3 + c\right)$

4. $y' = x\sqrt{1 - y^2}$ R: $y = \text{sen}\left(\frac{1}{2}x^2 + c\right)$

5. $x^2dy - cos^2(y)dx = 0$ R: $\text{tg}(y) + \frac{1}{x} = c$

6. $y^2dx + 2y^2dy = 0$ R: $x + \frac{1}{y} + 2y = c$

7. $e^ydx + x^2(2 + e^y)dy = 0$ R: $-\frac{1}{x} = 2e^{-y} - y + c$

8. $xdy = (x + y)dx$ R: $\frac{y}{x} = ln|x| + c$

9. $e^{2x+y}dx - 2e^{x-y}dy = 0$ R: $e^x + e^{-2y} = c$

10. $xy'(y - 1) - y = 0$ R: $xyc = e^y$

11. $(xy^2 + x)dx + (x^2y + y)dy = 0$ R: $(x^2 + 1)(y^2 + 1) = c$

12. $2ydy + 4x^3\sqrt{4 - y^4}dx = 0$ R: $y^2 = 2\text{sen}(c - x^4)$

13. $\frac{ln(y)}{ln(x)}dy - \frac{x^4}{y^2}dx = 0$ R: $\frac{y^3}{3}ln(y) - \frac{y^3}{9} = \frac{x^5}{5}ln(x) - \frac{x^5}{25} + c$

14. $y' = 1 + x \quad , \qquad y(1) = -1$ R: $y = x + \frac{x^2}{2} - \frac{5}{2}$

15. $y' = \frac{x}{y} \qquad , y(2) = -3$ R: $y^2 = x^2 + 5$

16. $y' = \frac{1+y^2}{xy} \quad , y(1) = 5$ R: $26x^2 - y^2 = 1$

17. $(x + 2y)dx + (y - 2x)dy = 0$ R: $\text{arctg}\left(\frac{y}{x}\right) - \frac{1}{2}ln(x^2 + y^2) = c$

18. $(2x + y)dx - ydy = 0$ R: $(y - 2x)^2(x + y) = c$

19. $y' = \frac{3x^2+6xy-y^2}{5x^2+2xy+y^2} \qquad , y(0) = 1$ R: $(y - x)(3x + y) = x + y$

20. $xy' = y - \sqrt{x^2 - y^2}$ R: $ln|x| + \text{arcsen}\left(\frac{y}{|x|}\right) = c$

21. $\left(x\sqrt{x^2 + y^2} - y^2\right)dx + xydy = 0$ R: $xln|x| + \sqrt{x^2 + y^2} = cx$

22. $\left(\frac{1}{x} - \frac{y}{x^2}e^{\frac{y}{x}}\right)dx + \left(\frac{1}{x}e^{\frac{y}{x}} - \frac{1}{y}\right)dy = 0$ R: $y = cx$

23. $y' = \sqrt{y - x} + 1$ R: $2\sqrt{y - x} = x + c$

24. $(12x + 6y - 1)dx + (6x + 3y - 2)dy = 0$ R: $3(y + 2x)^2 - 4y - 2x = c$

25. $(x + 2y - 2)dx + (2x - y + 3)dy = 0$ R: $\frac{x^2}{2} - 2xy - 2x - \frac{y^2}{2} + 3y = c$

26. $(3y - 7x + 7)dx + (7y - 3x + 3)dy = 0$ R: $(y - x + 1)^2(y + x - 1)^5 = c$

27. $\text{sen}(tx) + tx\cdot\cos(tx) + t^2\cos(tx)\cdot x' = 0$ R: $t\cdot\text{sen}(tx) = c$