

ESCUELA MILITAR DE INGENIERIA

ECUACIONES DIFERENCIALES

Misceláneas de problemas

2013

Tema: E.D. de Segundo Orden.

Resolver las siguientes ecuaciones diferenciales:

1. $y''' = xe^x, \quad y(0) = y'(0) = y''(0) = 0$

2. $y^{iv} = x$

3. $y''' = x \ln x, \quad y(1) = y'(1) = y''(1) = 0$

4. $y''' = x + \cos x$

5. $y''' = \frac{x}{(x+2)^5}, \quad y(1) = y'(1) = y''(1) = 0$

6. $(y'')^2 - 5y' + 6 = 0$

7. $(1+x^2)y'' + (y')^2 + 1 = 0$

8. $(y'')^2 - 2y''y' + 3 = 0$

9. $(y'')^2 + (y''')^2 = 1$

10. $xy'' = y' \ln \frac{y'}{x}$

11. $4y' + (y'')^2 = 4xy''$

12. $y'' = \frac{y'}{x} + \frac{x^2}{y'}, \quad y(2) = 0, y'(2) = 4$

13. $y'' = 1 + (y')^2$

14. $y'' = e^{2y}, \quad y(0) = y'(0) = 0$

15. $xy'(yy'' - (y')^2) - y(y')^2 = x^4y^3$

16. $x^4y'' = (y - xy')^3, \quad y(1) = y'(1) = 1$

17. $y'' \frac{y'}{x-1} = x(x-1), \quad y(2) = 1, y'(2) = -1$

18. $(1 + x^2)y'' + 1 + (y')^2 = 0$

19. $y'''(x-1) - y'' = 0, \quad y(2) = 2, y'(2) = 1, y''(2) = 1$

20. $xy'(yy'' - (y')^2) - y(y')^2 = x^4y^3$

21. $yy'' - (y')^2 = \frac{yy'}{1+x}$

22. $yy'' - (y')^2 = y^2y'$

23. $y''' = xe^{-x^2}, \quad y(0) = y'(0) = y''(0) = 0$

24. $x^2(y'')^2 - x^2y'y''' - (y')^2 = 0$

25. $(x^2 + y^2)y'' = (1 + (y')^2)(xy' - y)$

26. $a^2(y'')^2 = 1 + (y')^2$

27. $\frac{d^2y}{dx^2} = \frac{a+bx}{x^2}$

28. $x \frac{d^2y}{dx^2} = 1 + x^2$

29. $y'' = ae^y$

30. $\frac{d^2y}{dx^2} = \frac{a}{y^3}$