

ΑΠΑΝΤΗΣΕΙΣ ΠΡΟΒΛΗΜΑΤΩΝ

ΚΕΦΑΛΑΙΟ 1

1.1

$$22. 6y = 2e^{3x} - 3x^2 + c$$

$$23. y = \ln x + c$$

$$24. 2y = e^{x^2} + c$$

$$25. y = x \sin^{-1} x - \sqrt{x^2 + 1} + c$$

$$26. y = x e^x - e^x + 3$$

$$27. y = \sin^2 x + 1$$

$$28. y = x \ln x - x$$

$$29. y = x^2 + x + 3$$

$$30. 3y = (2x^{3/2} - 16)$$

$$31. y = 10 \tan^{-1} x$$

$$32. y = \sin^{-1} x$$

$$33. y = c + \ln |x(x-2)^{-1}|$$

$$34. y = c_1 + c_2 x + c_3 x^2 + c_4 x^3 + 16 \sinh(x/2)$$

$$35. y = c_1 + c_2 x + e^{-x} - \cos 3x$$

$$36. y = x^2$$

$$37. y = e^x / 2$$

$$38. y = x$$

1.3

$$1. y = c x^{-3}$$

$$2. \frac{1}{2} \ln |2y^2 + xy + x^2| + \frac{1}{\sqrt{7}} \arctan \left(\frac{4y+x}{x\sqrt{7}} \right) = c$$

$$3. \sqrt{1-y^2} - \ln \left| \frac{1+\sqrt{1-y^2}}{y} \right| = |x| + c$$

$$4. 4y^{3/2} = -3x + c$$

$$5. 2y^2 = 2 \ln |x| - x^2 + c$$

$$6. x^2 - 2xy - y^2 = c$$

$$7. c e^y = y - x + 2$$

$$8. e^x \sin y = c$$

$$9. x = c \cos^2 y$$

$$10. 2 \ln |y| = x^2 + y^2 + c$$

$$11. 2x^2 + 3y^2 = c$$

$$12. y^2 \ln |y| + x^2 = c y^2$$

$$13. 2y^2 = 2 \ln |x| + x^2 + c$$

$$14. y = \frac{1}{4} - \frac{1}{6} x^2 + c x^{-4}$$

$$15. 2 \ln (\cosh y) + x^2 = c$$

$$16. y^{5/3} = x^{5/3} + c$$

17. $r = c e^{\varphi}$

19. $r = c \sin \varphi$

21. $r = c \csc \varphi$

23. $e^{1/r} = c (\sec \varphi + \tan \varphi)$

25. $r^2 = c \sin 2\varphi$

27. $r = e^{\pm \sqrt{c - \varphi^2}}$

30. $\ln |x| + c = \tan^{-1} \left(\frac{y}{x} \right) - \frac{1}{2} \ln \left| 1 + \frac{y^2}{x^2} \right|$

31. $\sqrt{3} + \tan^{-1} \left(\frac{y}{1+x} \right) - \frac{1}{2} \ln \left((x+1)^2 + y^2 \right) = c$

32. $-y + 2 \ln |1+y| = x + c$

18. $\varphi^2 = -4 \ln |r| + c$

20. $r^2 = c \cos 2\varphi$

22. $c r = e^{\varphi^2/2}$

24. $r = 2 \sin \varphi + c \cos \varphi$

26. $r^n \cos n\varphi = c$

29. $\frac{2}{\sqrt{3}} \tan^{-1} (y/x) + \ln c (x^2 + y^2) = 0$

33. $y = \frac{4}{3} \ln |\sqrt{3}x - 1| + \frac{1}{\sqrt{3}}x + c$