ESERCIZI SU EQUAZIONI DIFFERENZIALI A VARIABILI SEPARABILI

1) $y' = \dfrac{-y}{x \ln y}$; $\quad y\left(e^{-1}\right) = e^2$

2) $y' = \dfrac{-y}{2x \ln y}$; $\quad y\left(e^{-1}\right) = e^2$

3) $y' = \dfrac{1+y^2}{2x}$; $\; y(e) = 1$

4) $y' = -\dfrac{(1+y)^2}{2x}$; $\quad y(e) = 1$

5) $y' = \dfrac{x\,y^2}{x^2-1}$; $\quad y(2) = -1$

6) $y' = \dfrac{x\,y^2}{x^2-5}$; $\quad y(3) = -1$

7) $y' = \dfrac{x\,y^2}{x^2-2}$; $\quad y(2) = -1$

8) $y' = (6x-1)\left(\dfrac{y}{2} - \dfrac{4}{y}\right)$; $\quad y(0) = -3$

9) $y' = \dfrac{e^{-y^2}}{2xy}$; $\quad y(1) = \sqrt{\ln 3}$

10) $y' = \dfrac{e^{-y^2}}{xy}$; $\quad y(1) = \sqrt{\ln 4}$

11) $y'(x) = \dfrac{y(\ln y)^2}{(x+2)^2}$; $\quad y(-6) = e^2$

12) $y'(x) = \dfrac{y(\ln y)^2}{(x-2)^2}$; $\quad y(1) = e^2$

13) $y'(x) = \dfrac{y(\ln y)^2}{(x-1)^2}$; $\quad y(0) = e^2$

14) $y'(x) = \dfrac{y(\ln y)^2}{(x+1)^2}$; $\quad y(1) = e^2$

15) $y'(x) = \dfrac{4e^{2x}}{2y+3}$; $\quad y(0) = -2$

16) $y'(x) = \dfrac{1}{2xy+3x}$; $\quad y(1) = -1$

17) $y'(x) = \dfrac{1}{2xy+3x}$; $\quad y(1) = -2$

18) $y'(x) = \dfrac{1}{4}(6x-5)e^{-y}$; $\qquad y(2) = 0$

19) $y'(x) = \dfrac{1}{2}(6x-5)e^{-2y}$; $\qquad y(2) = 0$

20) $y' = \dfrac{6x^2}{4y+3}$; $\quad y(1) = -1$

21) $y' = \dfrac{3x^2}{4y+3}$; $\quad y(1) = -1$

22) $y'(x) = \dfrac{2x\,y(x) - 5y(x)}{\left[\ln(y(x))\right]^2}$; $\quad y(0) = e^2$

23) $y'(x) = \dfrac{2x\,y(x) - 6y(x)}{\left[\ln(y(x))\right]^3}$; $\quad y(0) = e^2$

24) $y'(x) = \dfrac{2x\,y(x) - 4y(x)}{\ln(y(x))}$; $\quad y(0) = e^2$

25) $y' = \dfrac{6x^2}{4y+3}$; $\quad y(1) = -1$

26) $y' = \dfrac{3x^2}{4y+3}$; $\quad y(1) = -1$

27) $y'(x) = \dfrac{(y(x))^6}{x-3}$, $\quad y(2) = 1$

28) $y'(x) = \dfrac{(y(x))^4}{x-3}$, $\quad y(2) = 1$

29) $y'(x) = \dfrac{(y(x))^5}{x-3}$, $\quad y(1) = 1$

30) $y'(x) = \dfrac{(y(x))^3}{x-3}$, $\quad y(2) = \dfrac{1}{2}$

31) $y'(x) = \dfrac{3x^2\left(y^4 - 15\right)}{4y^3}$; $\quad y(-2) = 2$

32) $y'(x) = \dfrac{1 - 4\ln x}{x\,e^{-y(x)}}$; $\quad y(e) = 0$

33) $y'(x) = \dfrac{1 + 2\ln x}{x\,e^{y(x)}}$; $\quad y(e) = \ln 2$

34) $y' = \dfrac{e^x}{2y+3}$; $\quad y(0) = -1$

35) $y'(x) = (4x-1)(y(x))^3$, $\quad y\left(\frac{1}{2}\right) = 1$

36) $y'(x) = (2x+1)(y(x))^3$, $\quad y(-3) = \frac{1}{2}$

37) $y'(x) = \dfrac{e^{-2y(x)}}{x+3}$; $\quad y(1) = 0$

38) $y'(x) = \dfrac{e^{-3y(x)}}{x+2}$; $\quad y(1) = 0$

39) $y' = \dfrac{-y\ln^2 y}{(x+1)^2}$, $\quad y(1) = e^2$

40) $y' = \dfrac{2y\ln^2 y}{(x+2)^2}$, $\quad y(-1) = e$

41) $y' = \dfrac{1}{xy}$; $\quad y(1) = \sqrt{2}$

42) $y' = \dfrac{x^2}{y}$; $\quad y(0) = 1$

43) $y' = \dfrac{x^2+2}{x^2} e^{2y}; \quad y(-2) = 0$

44) $y' = \dfrac{x^2+1}{x^2} e^{2y}; \quad y(-2) = 0$

45) $y' = \dfrac{y^2+4}{x^2 y}; \quad y(1) = -2$

46) $y' = \dfrac{y^2+4}{x^2 y}; \quad y(1) = -2$

47) $y' = \dfrac{y^2+3}{x^2 y}; \quad y(1) = -2$

48) $y' = \dfrac{y^2+2}{x^2 y}; \quad y(1) = -2$

49) $y' = \frac{3}{8} \dfrac{x^2 e^{y^2}}{y}; \quad y(1) = \sqrt{\ln 2}$

50) $y' = \frac{3}{4} \dfrac{x^2 e^{y^2}}{y}; \quad y(1) = -\sqrt{\ln 2}$

51) $y' = \dfrac{3x^2 e^{-y^2}}{y}; \quad y(1) = \sqrt{\ln 3}$

52) $y' = -\frac{3}{2} \dfrac{x^2 e^{-y^2}}{y}; \quad y(1) = \sqrt{\ln 2}$

53) $y' = \dfrac{x}{y\left(x^2-3\right)}; \quad y(2) = -\sqrt{3}$

54) $y' = \dfrac{2x}{y\left(2x^2-1\right)}; \quad y(1) = -1$

55) $y' = \dfrac{7}{4y^3\left(2x^2+5x-3\right)}; \quad y(-10) = \sqrt[4]{\ln 3}$

56) $y' = \dfrac{x^2+1}{x^2 y + 2x^2}; \quad y(1) = 0$

57) $y' = \dfrac{3x+2}{x} y + 6x^3; \quad y(3) = -6$

58) $y' = \dfrac{y^3-9}{x y^2}; \quad y(e) = 2$

59) $y' = \dfrac{(2x+1)\, e^{-y^3}}{3y^2}; \quad y(2) = 0$

60) $y' = \dfrac{(2x+1)\, e^{-y^5}}{5y^4}; \quad y(2) = 0$

61) $y' = \dfrac{(2x+1)\, e^{-y^4}}{8y^3}; \quad y(2) = 0$

62) $y' = \dfrac{(2x+1)\, e^{-y^3}}{3y^2}; \quad y(2) = 0$

63) aggiornato al ottobre 2010

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