1. $x^3 y' = 2x + 1$

2. $xy' = 2\ln x + 3$

3. $y' = \cos x \cdot \cos 3x$

4. $x^2 y' - 2xy = 3y$

5. $(x + 2x^3)dx + (y + 2y^3)dy = 0$

6. $\begin{cases} y' + y\tan x = 0 \\ y(0) = 1 \end{cases}$

7. $\begin{cases} (1 + x^2)dy = 2x(y + 3)dx \\ y(0) = 1 \end{cases}$

8. $y' = \dfrac{xy - y^2}{x^2}$

9. $y' = \dfrac{-2x + 3y + 19}{y + 3}$

10. $3x + y - 2 + y'(x - 1) = 0$

11. $(3y - 7x + 7)dx - (3x - 7y - 3)dy = 0$

12. $(x + 4y)y' = 2x + 3y - 5$

13. $\begin{cases} y'(x^2 + xy) = y^2 \\ y(2) = 2 \end{cases}$

14. $\begin{cases} xy' = \sqrt{x^2 + y^2} + y \\ y(3) = 4 \end{cases}$

15. $(3x^2 \tan y - \dfrac{2y^3}{x^3})dx + (\dfrac{x^3}{\cos^2 y} + 4y^3 + \dfrac{3y^2}{x^2})dy = 0$

16. $(\sin y + y\sin x + \dfrac{1}{x})dx + (x\cos y - \cos x + \dfrac{1}{y})dy = 0$

17. $(1 - x^2 y)dx + (x^2 y - x^3)dy = 0$

18. $(2x\sin y + 3x^2)dx + (2x^2\cos y + x^3\cot y)dy = 0$

19. $(x + \sin x + \sin y)dx + \cos y dy = 0$

20. $(x^2 + y)dx - xdy = 0$

21. $(2xy^2 - y)dx + (y^2 + x + y)dy = 0$

תשובות

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

2. $y = \ln^2 x + 3\ln x + c$

3. $y = \frac{\sin 2x}{4} + \frac{\sin 4x}{8} + c$

4. $y = cx^2 e^{\frac{-3}{x}}$

5. $x^2 + y^2 + x^4 + y^4 = c$

6. $y = \cos x$

7. $y = 2x^2 - 1$

8. $e^{\frac{x}{y}} = cx$

9. $y - x + 8 = c(y - 3x + 13)^2$

10. $(x-1)(3x+2y-1) = c$

11. $(x+y-1)^5 (x-y-1)^2 = c$

12. $(y-x+5)^5 (2y+x-2) = c$

13. $y = 2e^{\frac{x-y}{x}}$

14. $y + \sqrt{x^2 + y^2} = x^2$

15. $x^3 \tan y + y^4 + \frac{y^3}{x^2} = c$

16. $x \sin y - y \cos x + \ln|xy| = c$

17. $\mu(x) = \frac{1}{x^2}$ $\quad xy^2 - 2x^2 y - 2 = cx$

18. $\mu(y) = \sin y$ $\quad x^2 \sin^2 y + x^3 \sin y = c$

19. $\mu(x) = e^x$ $\quad 2e^x \sin y + 2e^x (x-1) + e^x (\sin x - \cos x) = c$

20. $\mu(x) = \frac{1}{x^2}$ $\quad x - \frac{y}{x} = c$

21. $\mu(y) = \frac{1}{y^2}$ $\quad x^2 + y - \frac{x}{y} + \ln|y| = c$