Náznaky riešení:

Pozn: 1. Pri hľadaní partikulárneho riešenia v úlohách stačí nájsť jedno z nich. Teda pri určovaní neurčitého integrálu sa nemusí uviesť obligátne $+C$.

Pozn: 2. Odstraňovanie absolútnych hodnôt popísané v riešeniach sa prevádza obmedzením sa na vhodné intervaly. V niektorých náznakoch riešenia sa rovno uvádzajú tvary bez absolútnych hodnôt, t.j. predpokladá sa, že tie boli už odstránené.

1. $10^x - 10^{-y}y' = 0$ — $y = \log_{10} \frac{1}{C-10^x}$

2. $1 - 2x - y^2y' = 0$ — $y = \sqrt[3]{3x - 3x^2 + C}$

3. $\frac{1}{x^2} + \frac{y'}{1+y^2} = 0$ — $y = \operatorname{tg}(C + \frac{1}{x})$

4. $\frac{x}{\sqrt{1-x^2}} + \frac{yy'}{\sqrt{1-y^2}} = 0$, $y(0) = \frac{\sqrt{3}}{2}$ — $\sqrt{1-y^2} + \sqrt{1-x^2} = \frac{3}{2}$, resp. $y = \sqrt{x^2 + 3\sqrt{1-x^2} - \frac{9}{4}}$

5. $1 + y^2 + xyy' = 0$ — $y = \pm\sqrt{\frac{K-x^2}{x^2}}$

6. $-1 + e^{-y}(1 + y') = 0$ — $y = \ln \frac{1}{1+Ke^x}$

7. $e^{x+y} - y' = 0$ — $y = \ln \frac{1}{C-e^x}$

8. $2y - x^3y' = 0$ — $y = Ke^{-\frac{1}{x^2}}$

9. $(y-1)(y-2) - y' = 0$ — $y = \frac{Ke^x-2}{Ke^x-1}$

10. $(1 + e^x)yy' = e^x$ — $y = \pm\sqrt{C + 2\ln(1 + e^x)}$

11. $y'x^3 + xy = 0$ — $y = Ke^{\frac{1}{x}}, K \in R$

12. $\frac{x}{y+1} - \frac{yy'}{1+x} = 0$, $y(0) = 1$ — $3y^2 + 2y^3 = 3x^2 + 2x^3 + 5$

13. $\frac{\mathrm{d}y}{\mathrm{d}x} = \operatorname{tg} y \operatorname{cotg} x$, $y(\frac{\pi}{2}) = \frac{\pi}{6}$ — $y = \arcsin(\frac{1}{2}\sin x)$

14. $e^{x-y} - y' = 0, y(0) = 1$ — $y = \ln(e^x + e - 1)$

15. $y' - y \operatorname{tg} x = 0$

16. $y' - y(x \sin x - \cos x)$ — $y = Ke^{-x\cos x}, K \in R$

17. $y' + \frac{1}{x^2}y = 0$ — $y = Ke^{\frac{1}{x}}, K \in R$

18. $y' + 3y = x$ — $y = \frac{1}{9}(3x - 1) + Ke^{-3x}$, $K \in R$

19. $x^2y' + xy = -1$ — $y = -\frac{\ln x}{x} + \frac{K}{x}$, $K \in R$

20. $xy' + y = x^3$ — $y = \frac{1}{4}x^3 + \frac{K}{x}, K \in R$

21. $y' + \frac{1}{x+1}y = \sin x$ — $y = -\cos x + \frac{\sin x}{x+1} + \frac{K}{x+1}, K \in R$

22. $(1 + x^2)y' + y = \operatorname{arctg} x$ — $y = \operatorname{arctg} x - 1 + Ke^{-\operatorname{arctg} x}$

23. $y' \cos x + 2y \sin x = 2 \sin x$ — $y = 1 + K\cos^2 x$

24. $x\ln(x)y' - 2y = \ln x$

$$\boxed{y = C\ln^2 x - \ln x, C \in R, x \in R^+ \setminus \{0\}}$$

25. $y' - xy = xe^{x^2}$

$$\boxed{y = e^{x^2} + Ke^{\frac{x^2}{2}},\ K \in R}$$

26. $y' - \frac{xy}{1-x^2} = \arcsin x + x$

$$\boxed{y = \frac{K}{\sqrt{1-x^2}} + \frac{1}{4}\frac{\arcsin^2 x}{\sqrt{1-x^2}} + \frac{1}{2}x\arcsin x + \frac{1}{4}\sqrt{1-x^2} - \frac{1}{8}\frac{1}{\sqrt{1-x^2}} - \frac{1}{3}(1-x^2), K \in R}$$

27. $xy' - y = x^2\cos x$

$$\boxed{y = x\sin x + Kx, K \in R}$$

28. $y' + 2xy = xe^{-x^2}$

$$\boxed{y = \frac{1}{2}x^2e^{-x^2} + Ke^{-x^2}, K \in R}$$

29. $y' + x^2y = x^2,\ y(2) = 1$

$$\boxed{y = 1}$$

30. $y' + y = \cos x, y(0) = 1$

$$\boxed{y = \frac{1}{2}(e^{-x} + \cos x + \sin x)}$$

31. $y' + \frac{n}{x}y = \frac{a}{x^n},\ n = 2, 3, ..., a > 0, y(1) = 0$

$$\boxed{y = \frac{a}{x^n}(1-x)}$$

32. $y' + y\operatorname{cotg} x = \sin x,\ y(\frac{\pi}{2}) = 1$

$$\boxed{y = \frac{1}{2}\cos x - \frac{1}{2}\frac{x}{\sin x} + \frac{3}{4}\frac{\pi}{\sin x}}$$

33. $y'\sqrt{1-x^2} + y = \arcsin x,\ y(0) = 0$

34. $y' - \frac{y}{x\ln x} = x\ln x,\ y(e) = \frac{e^2}{2}$

$$\boxed{y = \frac{1}{2}x^2\ln x}$$

35. $y'\sin x - y\cos x = 1,\ y(\frac{\pi}{2}) = 0$

$$\boxed{y = -\cos x}$$