

习题 8

1. (1) $1 + y^2 = C(x^2 - 1)$; (2) $(1 + e^x)(1 - e^y) = C$;

(3) $\ln C(y + 2x) + \frac{x}{y + 2x} = 0$; (4) $2ye^{\frac{x}{y}} + x = C$;

(5) $y = C_1 e^x + C_2 e^{-x} - \frac{1}{2} + \frac{1}{10} \cos 2x$; (6) $y = C_1 \cos 2x + C_2 \sin 2x + \frac{1}{3} x \cos x + \frac{2}{9} \sin x$;

(7) $\frac{x^2}{y^2} = C - \frac{2}{3} x^3 (\ln x + \frac{2}{3})$; (8) $y = C_1 e^x + C_2 (2x + 1)$;

(9) $y = C_1 (3 + 2x) e^{-x} + C_2 e^x$;

2. (1) $(1 + e^x) \sec y = 2\sqrt{2}$; (2) $x^2 + y^2 = x + y$;

(3) $y \sin x + 5e^{\cos x} = 1$; (4) $y = \frac{-e^x + e^{2x}}{x} = \frac{e^x}{x} (e^x - 1)$;

(5) $y = e^{-x} - e^{4x}$.

3. $2y + \frac{1}{\sqrt{y}} - 3x = 0$.

4. $y^3 = x$.

5. $y = x(\ln \ln x + e^{-1})$.

6. $t = \frac{3}{4000 \ln(5/2)} (\text{s})$.

7. $\phi(x) = \frac{\cos x + \sin x + e^x}{2}$.

8. 目标行驶 $\frac{5}{24}$ 海里, 经过 $\frac{5}{24}a$ 秒被鱼雷击中.

10. $f(x) = -\frac{9}{3} + \frac{11}{3} e^{-\frac{1}{2}x} + 2x + \frac{1}{3} e^x$.

12. 7 点 22 分 55 秒.