

1. From $dy = \sin 5x \, dx$ we obtain $y = -\frac{1}{5} \cos 5x + c$.
3. From $dy = -e^{-3x} \, dx$ we obtain $y = \frac{1}{3}e^{-3x} + c$.
5. From $\frac{1}{y} dy = \frac{4}{x} dx$ we obtain $\ln |y| = 4 \ln |x| + c$ or $y = c_1 x^4$.
7. From $e^{-2y} dy = e^{3x} dx$ we obtain $3e^{-2y} + 2e^{3x} = c$.
23. From $\frac{1}{x^2 + 1} dx = 4 dt$ we obtain $\tan^{-1} x = 4t + c$. Using $x(\pi/4) = 1$ we find $c = -3\pi/4$. The solution of the initial-value problem is $\tan^{-1} x = 4t - \frac{3\pi}{4}$ or $x = \tan\left(4t - \frac{3\pi}{4}\right)$.
25. From $\frac{1}{y} dy = \frac{1-x}{x^2} dx = \left(\frac{1}{x^2} - \frac{1}{x}\right) dx$ we obtain $\ln |y| = -\frac{1}{x} - \ln |x| = c$ or $xy = c_1 e^{-1/x}$. Using $y(-1) = -1$ we find $c_1 = e^{-1}$. The solution of the initial-value problem is $xy = e^{-1-1/x}$ or $y = e^{-(1+1/x)}/x$.