2.4 - Exact Equations

Example: Determine whether the given differential equation is exact. If it is exact, solve it.

$$(\sin y - y \sin x)\, dx + (\cos x + x \cos y - y)\, dy = 0$$

Example: $\left(1 + \ln x + \dfrac{y}{x}\right)\ dx = (1 - \ln x)\ dy$

Example: Solve the given initial-value problem.

$(e^x + y)\ dx = (2 + x + ye^y)\ dy = 0 \qquad y(0) = 1$

Example: Solve the given differential equation by finding an appropriate integrating factor.

$$\cos x \; dx + \left(1 + \frac{2}{y}\right) \sin x \; dy = 0$$