2.4 - Exact Equations

2.4a

2.4b

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

2.4c

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.

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

2.4d

Where does the integrating factor come from?