

Suppose the differential equation

$$M(x, y)dx + N(x, y)dy = 0$$

is NOT exact.

If

$$g(x) = \frac{\partial M/\partial y - \partial N/\partial x}{N}$$

is a function of only x , then

$$\mu(x) = e^{\int g(x)dx}$$

is an integrating factor.

If

$$g(y) = \frac{\partial M/\partial y - \partial N/\partial x}{-M}$$

is a function of only y , then

$$\mu(y) = e^{\int g(y)dy}$$

is an integrating factor.