

WRITE YOUR NAME:

MAC 2302 Quiz 3
Tuesday September 10th

Solve the differential equation using separation of variables.

$$\frac{dy}{dx} = xy$$

$$\frac{1}{y} dy = x dx$$

$$\int \frac{1}{y} dy = \int x dx$$

$$\ln |y| = \frac{x^2}{2} + C$$

$$e^{\ln |y|} = e^{\frac{x^2}{2} + C} = e^{\frac{x^2}{2}} \cdot e^C$$

$$|y| = e^C \cdot e^{\frac{x^2}{2}}$$

$$y = \pm e^C \cdot e^{\frac{x^2}{2}}$$

Constant,
can rename

$$y = C \cdot e^{\frac{x^2}{2}}$$

Notice the final answer has a constant being MULTIPLIED,
not added. You can't just assume there's a +C in your
final answer.

The +C happens at this step.
After this step, you must do correct algebra
with the +C.

NOTE!

$e^{a+c} = e^a \cdot e^c$
 $e^a + e^c$
or $e^a + c$
is WRONG!