

$$\int_2^{10} \frac{10}{y} dy = 1.8 + \int_1^5 \frac{10}{x} dx - 8$$

$$\int_2^{10} \frac{10}{y} dy = \int_1^5 \frac{10}{x} dx$$

$$10 \cdot \ln|y| \Big|_2^{10}$$

$$10 \ln|x| \Big|_1^5$$

$$10 \ln 10 - 10 \ln 2 \stackrel{?}{=} 10 \ln 5 - 10 \ln 1$$

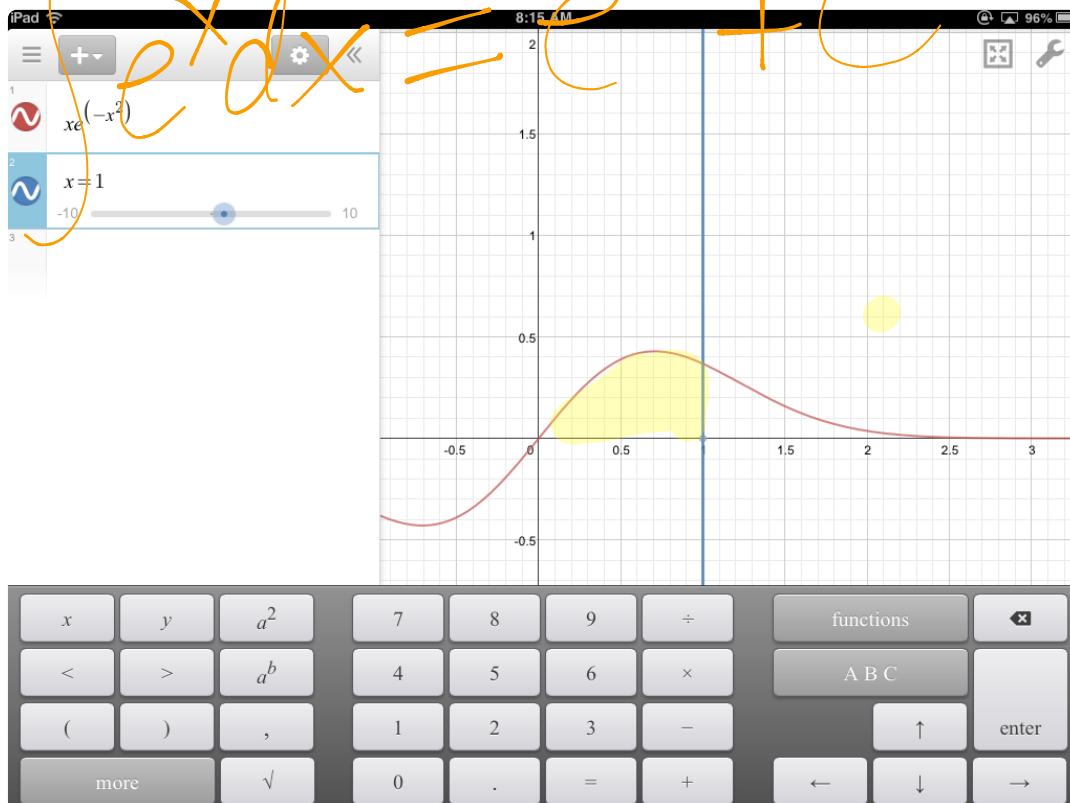
$$10(\ln 10 - \ln 2) = 10(\ln 5 - \ln 1)$$

$$10 \ln 5 = 10 \ln 5 \quad \checkmark$$

$$(45) f(x) = x e^{-x^2} \quad \begin{matrix} y=0 \\ 0 \leq x \leq 1 \end{matrix}$$

$$\frac{d}{dx}(e^u) = e^u \cdot u'$$

$$\int e^x dx = e^x + C$$



$$\int_0^1 x e^{-x^2} dx$$

$$\left. \begin{array}{l} u = -x^2 \\ du = -2x dx \\ \frac{1}{2} du = x dx \end{array} \right\} \int_0^{-1} \frac{1}{2} du \cdot e^u$$

$$-\frac{1}{2} \int_0^{-1} e^u du = \frac{1}{2} \int_{-1}^0 e^u du$$

$$= \frac{1}{2} e^u \Big|_{-1}^0 = \frac{1}{2} e^0 - \left(\frac{1}{2} e^{-1} \right)$$

$$= \frac{1}{2} - \frac{1}{2e}$$

p. 418 hw

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