Quiz 3

January 22, 2016

Use integration by parts to evaluate $\int_1^2 \sqrt{x}\ln(4x)dx$. (Round your answer to two decimal places.)

$u = \ln(4x)$ $\quad dv = x^{1/2}dx$

$du = \frac{1}{x}dx$ $\quad v = \frac{2}{3}x^{3/2}$

$$\int_1^2 \sqrt{x}\ln(4x)dx = \left[\ln(4x)\left(\tfrac{2}{3}x^{3/2}\right) - \int \tfrac{2}{3}x^{3/2}\left(\tfrac{1}{x}dx\right)\right]_1^2$$

$$= \left[\tfrac{2}{3}x^{3/2}\ln(4x) - \tfrac{2}{3}\int x^{1/2}dx\right]_1^2$$

$$= \left[\tfrac{2}{3}x^{3/2}\ln(4x) - \tfrac{2}{3}\left(\tfrac{2}{3}x^{3/2}\right)\right]_1^2$$

$$\approx \boxed{2.18}$$