From class:

$$\frac{2x^2+x+32}{(x^2+16)(x+2)} = \frac{\frac{1}{10}x + \frac{8}{10}}{x^2+16} + \frac{\frac{19}{10}}{x+2}$$

so need two things:

$$\frac{1}{10}\int_1^4 \frac{x+8}{x^2+16}\,dx \quad \text{and} \quad \frac{19}{10}\int_1^4 \frac{1}{x+2}\,dx$$

easy!

$$\frac{19}{10}\left(\ln|x+2|\Big|_1^4\right)$$

$$\boxed{1.32}$$

lets work on:

$$\frac{1}{10}\int_1^4 \frac{x+8}{x^2+16}\,dx$$

First 'split' it up:

$$\frac{1}{10}\int_1^4 \frac{x}{x^2+16}\,dx + \frac{1.8}{10}\int_1^4 \frac{1}{x^2+16}\,dx$$

easy

$u = x^2+16$

$du = 2x\,dx$

$\frac{1}{2}du = x\,dx$

$$\rightarrow \frac{1}{10}\cdot\frac{1}{2}\ln(x^2+16)\Big|_1^4 = \boxed{0.0316}$$

①.

$$\rightarrow \frac{8}{10}\int_1^4 \frac{1}{x^2+16}\,dx = \frac{4}{5}\cdot\int_1^4 \frac{1}{16\left(\frac{x^2}{16}+1\right)}\,dx$$

$$= \frac{4}{5}\cdot\frac{1}{16}\int_1^4 \frac{1}{\left(\frac{x}{4}\right)^2+1}\,dx$$

Let $u = \frac{x}{4}$ then $du = \frac{1}{4}\,dx$

$\rightarrow 4\,du = dx$

$$\rightarrow \frac{4}{5}\cdot\frac{1}{16}\cdot 4\int \frac{1}{u^2+1}\,du$$

$$= \frac{1}{5}\tan^{-1}\left(\frac{x}{4}\right)\Big|_1^4$$

$$\rightarrow \frac{1}{5}\left(\tan^{-1}1 - \tan^{-1}(1/4)\right) = 0.108$$

$1.32 + 0.0316 + 0.108 =$

1.464

5. Express the integrand as a sum

$$\int_1^4 \frac{2x^2+x+32}{(x^2+16)(x+2)}\,dx$$

- A. 1.46
- B. 2.92
- C. 0.73
- D. 1.19

letter A