

Integrating $\frac{1}{(5x+2)^2}$ **from 1 to infinity**

Compute: $\int_1^{\infty} \frac{dx}{(5x+2)^2}$

28/6/25

$$\int_1^{\infty} \frac{1}{(5x+2)^2} dx$$

$$= \int_1^{\infty} (5x+2)^{-2} dx$$

$$= \frac{(5x+2)^{-1}}{-1(5)} \Big|_1^{\infty}$$

$$= -\frac{1}{5(5x+2)} \Big|_1^{\infty}$$

$$\Rightarrow \lim_{N \rightarrow \infty} -\frac{1}{5(5x+2)} \Big|_1^N$$

$$= \lim_{N \rightarrow \infty} - \left(\frac{1}{5(5N+2)} - \frac{1}{5(5(1)+2)} \right)$$

$$= - \left(0 - \frac{1}{35} \right)$$

$$= \frac{1}{35}$$