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Analytical Methods (ACHA4000)

$$\text{ii) } \int \frac{8}{3x+10} dx$$
$$= 8 \times \int \frac{1}{3x+10} dx$$

$$= 8 \times \int \frac{1}{3u} du$$

$$= 8 \times \frac{1}{3} \times \int \frac{1}{u} du$$

$$= 8 \times \frac{1}{3} \ln|u|$$

$$= \frac{8}{3} \ln|3x+10| + C$$

$$\text{iii) } \int \frac{1}{x^2+9} dx$$

$$= \int \frac{1}{3(u^2+1)} du$$

$$= \frac{1}{3} \times \int \frac{1}{u^2+1} du$$

$$= \frac{1}{3} \arctan(u)$$

$$= \frac{1}{3} \arctan\left(\frac{x}{3}\right) + C$$
