

$$b) \int 2x \cos x \, dx$$

$$2 \int x \cos(x) \, dx$$

Integrate by parts

$$= \frac{x}{2} \sin(x) - \int \sin(x) \, dx$$

$$= \frac{x}{2} \sin(x) + 2 \cos(x)$$

$$= 2x \sin(x) + 2 \cos(x) + C$$

$$ii) \int_1^2 5x e^x \, dx$$

remove the constant

$$= 5 \int_1^2 x e^x \, dx$$

integration by parts

$$= 5 \left[e^x x - \int e^x \, dx \right]_1^2$$

$$= 5e^2$$

c)

$$iii) \int \frac{2x}{x^2} \, dx$$

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

$$= 2 \ln x$$

$$= 2 \ln x + C$$

$$ii) \int \frac{4}{7x+10} \, dx$$

$$= 4 \int \frac{1}{7x+10} \, dx$$

$$= 4 \int \frac{1}{u} \, du$$

$$= 4 \cdot \frac{1}{7} \int \frac{1}{u} \, du$$

$$= \frac{4}{7} \ln 7x+10$$

$$= \frac{4}{7} \ln u$$

$$= \frac{4}{7} \ln 7x+10$$