

6) i)

12/01/22 ACMA 4006
2111290

Page 12 of 12

$$\int 2x \sin 3x dx$$

$$u = 2x$$

$$v = -\frac{1}{3} \cos 3x$$

$$\frac{du}{dx} = 2$$

$$\frac{dv}{dx} = \sin 3x$$

$$= 2x \left(-\frac{1}{3} \cos 3x\right) - \int \left(-\frac{1}{3} \cos 3x\right) \times 2$$

$$= 2x \left(-\frac{1}{3} \cos 3x\right) + \frac{2}{3} \int \cos 3x$$

$$= 2x \left(-\frac{1}{3} \cos 3x\right) + \frac{2}{3} \int \cos 3x$$

$$= 2x \left(-\frac{1}{3} \cos 3x\right) + \frac{2}{3} \times \left(\frac{1}{3} \sin 3x\right) + C$$

$$= 2x \left(-\frac{1}{3} \cos 3x\right) + \frac{2}{9} \sin 3x + C$$
