Integration (6 marks each)

Use integration by parts to find the following integrals:

1.

$$\int 4x^2 \sin(x)\, , dx$$

2.

$$\int lnx\, , dx$$

Use the provided substitution to find the following integrals:

3.

$$\int (2x+3) \cdot e^{x^2+3x}\, , dx, ; u = x^2 + 3x$$

4.

$$\int_0^2 \frac{x^3 \cdot \cos(x^2)}{(1+x^2)^2}\, dx, ; u = 1 + x^2$$

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