. 5 1. Consider the demand function

$$q = 48,000 - 10p^2$$

where p is the price and q is the demand.

Find the elasticity E (as a function of p).

Solution. Recall the elasticity is defined as

$$E = -\frac{p}{q}\frac{dq}{dp}$$

and so

$$E = -\frac{p}{48000 - 10p^2}(-20p) = \frac{20p^2}{48000 - 10p^2}.$$

. 5 2. Find $\displaystyle\int \left(\frac{9}{x} - 3e^x\right)\, dx$.

Solution. We have

$$\int \left(\frac{9}{x} - 3e^x\right)\, dx = 9\int \frac{1}{x}\, dx - 3\int e^x\, dx = 9\ln|x| - 3e^x + C$$