. 5 1. Consider the demand function

$$q = 37,500 - 5p^2$$

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

$$E = -\frac{p}{37500 - 5p^2}(-10p) = \frac{10p^2}{37500 - 5p^2}.$$

. 5 2. Find $\displaystyle\int \left(10e^x - \frac{4}{x}\right) dx$.

Solution. We have

$$\int \left(10e^x - \frac{4}{x}\right) dx = 10\int e^x\, dx - 4\int \frac{1}{x}\, dx = 10e^x - 4\ln|x| + C$$