

1. Given that

$$f(x) = e^{2x} \cos x$$

(a) Show that

$$f''(x) = pf(x) + qf'(x)$$

where p and q are integers to be determined.

(5)

(b) Hence find the Maclaurin series for $f(x)$, in ascending powers of x , up to and including the term in x^5 , giving each coefficient in its simplest form.

(3)