(25 Marks)

(a) Given the simultaneous equations

$$2x + y = 1$$

$$x^2 - 4ky + 5k = 0$$

where k is a non zero constant.

(i) Show that

$$x^2 + 8kx + k = 0.$$

Given that $x^2 + 8kx + k = 0$ has equal roots,

(ii) by finding the discriminant, show that $k = \frac{1}{16}$.

(iii) For this value of k, find the solution of the simultaneous equations.

(b) Find the set values of x for which $x(x - 4) > 12$.