Quadratic Discriminant Example

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8. The equation $x^2 + (k-3)x + (3-2k) = 0$, where k is a constant, has two distinct real roots.

(a) Show that k satisfies

$$k^2 + 2k - 3 > 0$$

(3)

(b) Find the set of possible values of k.

(4)

2 distinct real roots $\Rightarrow$ discriminant > 0

a)

$b^2 - 4ac > 0$

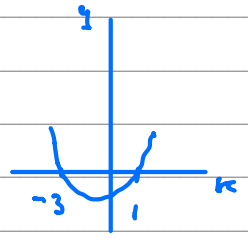
$(k-3)^2 - 4 \times 1 \times (3-2k) > 0$

$k^2 - 6k + 9 - 12 + 8k > 0$

$k^2 + 2k - 3 > 0$

b)

$(k-1)(k+3) > 0$



Either $k < -3$ or $k > 1$

H 3 5 4 0 2 A 0 1 4 2 4