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Roots and Discriminant | Past Exam Question | C1 Edexcel January 2011 Q8

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

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

For 2 roots $b^2-4ac>0$

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

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

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

$ax^2+bx+c=0$

$x=\dfrac{-b\pm\sqrt{b^2-4ac}}{2a}$

2 roots $b^2-4ac>0$

1 root $b^2-4ac=0$

No roots $b^2-4ac<0$

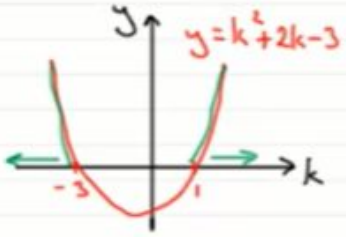
(b) Find the set of possible values of k.

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

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

$\therefore$ Critical values are

$k=-3$ or $k=1$



from the graph $y>0$ when

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

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