2(v) $ax^2+bx+c=0$

$\because$ a, c have opposite signs

$\therefore$ ac is -ve

$D = b^2-4ac$

$= b^2 - 4(-\text{ve value})$

$\therefore D > 0$

True

2(vi) $ax^2+bx+c=0$

a, c have same sign

$\therefore$ ac is +ve.

$D = b^2-4ac$

$= 0^2 - 4(+\text{ve value})$

$D < 0$

$\therefore$ no real roots

(3) False

$x^2-3=0$ has integral coeff. but roots are $\pm\sqrt{3}$ which are not integral

(4) yes

$x^2-3=0$ has integral coeff. but both roots are irrational ($\pm\sqrt{3}$)

(5) yes

$\sqrt{7}x^2+2\sqrt{7}x-3\sqrt{7}=0$ has rational roots 1, -3

(6) $LHS = (0.2)^2 - 0.4$

$= 0.04 - 0.4$

$= -0.36$

$\neq 0$

$\therefore$ 0.2 is not a root of $x^2-0.4=0$

(7) yes. $x^2+bx+c=0$

if $b=0$

$x^2+c=0$

$\Rightarrow x^2 = -c$

$\Rightarrow x = \pm\sqrt{-c}$ [-c is +ve as c is -ve]