(vii) $\sqrt{2}x^2 - \frac{3}{\sqrt{2}}x + \frac{1}{\sqrt{2}} = 0$

$D = b^2 - 4ac$

$= \left(-\frac{3}{\sqrt{2}}\right)^2 - 4 \times \sqrt{2} \times \frac{1}{\sqrt{2}}$

$= \frac{9}{2} - 4$

$= \frac{9-8}{2}$

$= \frac{1}{2}$

$\because D > 0$

$\therefore$ two distinct real roots

(viii) $x(1-x) - 2 = 0$

$\Rightarrow x - x^2 - 2 = 0$

$\Rightarrow x^2 - x + 2 = 0$

$D = b^2 - 4ac$

$= (-1)^2 - 4 \times 1 \times 1$

$= 1 - 4$

$= -3$

$\because D < 0$

no real roots

(ix) $(x-1)(x+2) + 2 = 0$

$\Rightarrow x^2 + x - 2 + 2 = 0$

$\Rightarrow x^2 + x = 0$

$D = b^2 - 4ac$

$= 1^2 - 4 \times 1 \times 0$

$= 1 - 0$

$= 1$

$\because D > 0$

two distinct real roots

(x) $(x+1)(x-2) + x = 0$

$\Rightarrow x^2 - x - 2 + x = 0$

$\Rightarrow x^2 - 2 = 0$

$D = b^2 - 4ac$

$= 0^2 - 4 \times 1 \times -2$

$= 0 + 8$

$= 8$

$\because D > 0$

two distinct real roots.

2(i) False
[It has at the most 2 real roots]

(ii) False
$x^2 + 4 = 0$ has no real roots.

(iii) False $x^2 + 4 = 0$ has no real roots.

(iv) True

$\therefore$ true