Ex 4.4

1.(i) $2x^2 - 3x + 5 = 0$

$b^2 - 4ac = 9 - 4 \times 5 \times 2$

(no real no) $= 9 - 40 = -31$

(ii) $3x^2 - 4\sqrt{3}x + 4 = 0$

$b^2 - 4ac = 48 - 4 \times 4 \times 3$

(equal) $= 48 - 48 = 0$

(iii) $2x^2 - 6x + 3 = 0$

$b^2 - 4ac = 36 - 4 \times 3 \times 2$

(distinct real) $= 12$

2. (i) $2x^2 + kx + 3 = 0$

$$x = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{-k + \sqrt{k^2 - 24}}{4}$$

$b^2 - 4ac = 0$

$k^2 - 4 \times 3 \times 2 = 0$

$k^2 - 24 = 0$

$k^2 = 24$

$k = \sqrt{24} = 2\sqrt{6}$

(ii) $kx(x-2) + 6 = 0$

$kx^2 - 2kx + 6$

$b^2 - 4ac = 0$

$4k^2 - 24k = 0$

$4k(k - 6) = 0$

$k = 6$

3. $(x)(2x) = 800$

$2x^2 = 800$

$x^2 = 400$

$x = 20, 40$

4. $(x-4)(16-x) = 48$

$16x - x^2 - 64 + 4x = 48$

$-x^2 + 20x - 112 = 0$

$x^2 - 20x + 112$

$b^2 - 4ac = 400 - 4 \times 112 \times 1$

$= 400 - 448$

$= -48$ (not possible)

5. $2(l+b) = 80$ (perimeter)

$l + b = 40 \quad b = 40 - l$

$lb = 400$ (area)

$(x)(40-x) = 400 \qquad x = 20, 20$

$x^2 - 40x - 400$

$x^2 - 20x - 20x - 400$

$x(x-20) - 20(x-20)$