

# MATHEMATICS

$$y = \sqrt{(x+6)^2 + 25} + \sqrt{(x-6)^2 + 121}$$

$$y = [(x+6)^2 + 25]^{1/2} + [(x-6)^2 + 121]^{1/2}$$

$$y = [(x^2 + 12x + 36) + 25]^{1/2} + [(x^2 - 12x + 36) + 121]^{1/2}$$

$$y = [x^2 + 12x + 61]^{1/2} + [x^2 - 12x + 157]^{1/2}$$

Find the value of  $x$  in both quadratic equations respectively

Let  $x$ . Then;  $x^2 + 12x + 61$

$$\text{Using } -b \pm \frac{\sqrt{(b^2 - 4ac)}}{2a} \text{ where } a = 1, b = 12, c = 61$$

Substituting their variable

$$-12 \pm \frac{\sqrt{(12^2 - 4 \cdot 1 \cdot 61)}}{2 \cdot 1}$$

$$-12 \pm \frac{\sqrt{(144 - 244)}}{2}$$

$$-12 \pm \sqrt{50} = -12 \pm 5\sqrt{2}$$

$$x = -12 + 5\sqrt{2} \text{ or } -12 - 5\sqrt{2}$$

Also, for  $x^2 + 12x + 61$

Also, for  $x^2 - 12x + 157$

$$a=1; b=-12; c=157$$

$$\text{Using } -b \pm \sqrt{\frac{(b^2 - 4ac)}{2}}$$

$$-(-12) \pm \sqrt{\frac{[(-12)^2 - 4 \cdot 1 \cdot 157]}{2}}$$

$$12 \pm \sqrt{\frac{144 - 628}{2}}$$

$$12 \pm \sqrt{\frac{484}{2}}$$

$$12 \pm \sqrt{242}$$

$$12 \pm \sqrt{121 \cdot 2}$$

$$12 \pm 11\sqrt{2}$$

$$x = 12 + 11\sqrt{2} \text{ or } 12 - \sqrt{}$$

$$x = 12 + 11\sqrt{2} \text{ or } 12 - 11\sqrt{2}$$

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