

تمرين 8

أحل المعادلات التالية:

$$* \text{ لدينا: } \sqrt{3}(x-1) + 3(x-\sqrt{2}) = \sqrt{12}x - \sqrt{8}$$

$$\sqrt{3}x - \sqrt{3} + 3x - 3\sqrt{2} = 2\sqrt{3}x - 2\sqrt{2} \quad \text{يعني:}$$

$$\sqrt{3}x + 3x - 2\sqrt{3}x = \sqrt{3} + 3\sqrt{2} - 2\sqrt{2} \quad \text{يعني:}$$

$$(\sqrt{3} + 3 - 2\sqrt{3})x = \sqrt{3} + \sqrt{2} \quad \text{يعني:}$$

$$(3 - \sqrt{3})x = (\sqrt{3} + \sqrt{2}) \quad \text{يعني:}$$

$$x = \frac{\sqrt{3} + \sqrt{2}}{3 - \sqrt{3}}$$

يعني:

$$x = \frac{(\sqrt{3} + \sqrt{2})(3 + \sqrt{3})}{(3 - \sqrt{3})(3 + \sqrt{3})}$$

$$x = \frac{3\sqrt{3} + 3 + 3\sqrt{2} + \sqrt{6}}{3^2 - (\sqrt{3})^2}$$

$$x = \frac{3\sqrt{3} + 3 + 3\sqrt{2} + \sqrt{6}}{6}$$

إذن:

ومنه فإن:

$$\frac{3\sqrt{3} + 3 + 3\sqrt{2} + \sqrt{6}}{6} \text{ حل هذه المعادلة هو العدد:}$$

$$\frac{\sqrt{3}(x-1)}{2} - \frac{\sqrt{2}(x+1)}{3} = \sqrt{27} + \sqrt{8} \quad * \text{ لدينا:}$$

$$\frac{3\sqrt{3}(x-1)}{6} - \frac{2\sqrt{2}(x+1)}{6} = \frac{6\sqrt{27} + 6\sqrt{8}}{6} \text{ يعني:}$$

$$3\sqrt{3}x - 3\sqrt{3} - 2\sqrt{2}x - 2\sqrt{2} = 18\sqrt{3} + 12\sqrt{2}$$

$$(3\sqrt{3} - 2\sqrt{2})x = 18\sqrt{3} + 12\sqrt{2} + 3\sqrt{3} + 2\sqrt{2}$$

$$(3\sqrt{3} - 2\sqrt{2})x = 21\sqrt{3} + 14\sqrt{2}$$

يعني:

$$x = \frac{21\sqrt{3} + 14\sqrt{2}}{3\sqrt{3} - 2\sqrt{2}}$$

يعني:

$$x = \frac{(21\sqrt{3} + 14\sqrt{2})(3\sqrt{3} + 2\sqrt{2})}{(3\sqrt{3} - 2\sqrt{2})(3\sqrt{3} + 2\sqrt{2})}$$

يعني:

$$x = \frac{189 + 42\sqrt{6} + 42\sqrt{6} + 56}{(3\sqrt{3})^2 - (2\sqrt{2})^2}$$

يعني:

$$x = \frac{245 + 84\sqrt{6}}{19}$$

إذن:

$$\frac{245 + 84\sqrt{6}}{19} \text{ ومنه فإن حل هذه المعادلة هو العدد}$$

$$\sqrt{\frac{3}{5}}(x+1) + \sqrt{\frac{5}{3}}(x-1) = \frac{1}{15} \quad * \text{ لدينا:}$$

$$\sqrt{15} \left[\sqrt{\frac{3}{5}}(x+1) + \sqrt{\frac{5}{3}}(x-1) \right] = \sqrt{15} \times \frac{1}{15} \text{ يعني:}$$

$$\sqrt{15} \times \sqrt{\frac{3}{5}}(x+1) + \sqrt{15} \times \sqrt{\frac{5}{3}}(x-1) = \frac{\sqrt{15}}{15}$$

$$\sqrt{\frac{45}{5}}(x+1) + \sqrt{\frac{75}{3}}(x-1) = \frac{\sqrt{15}}{15}$$

يعني:

$$\sqrt{9}(x+1) + \sqrt{25}(x-1) = \frac{\sqrt{15}}{15}$$

يعني:

$$3(x+1) + 5(x-1) = \frac{\sqrt{15}}{15} \quad \text{يعني:}$$

$$3x + 3 + 5x - 5 = \frac{\sqrt{15}}{15} \quad \text{يعني:}$$

$$8x = \frac{\sqrt{15}}{15} + 2 \quad \text{يعني:}$$

$$8x = \frac{\sqrt{15} + 30}{15} \quad \text{يعني:}$$

$$x = \frac{\sqrt{15} + 30}{15} \times \frac{1}{8} \quad \text{إذن:}$$

$$x = \frac{\sqrt{15} + 30}{120}$$

ومنه فإن حل هذه المعادلة هو العدد $\frac{\sqrt{15} + 30}{120}$