



MATH LEAGUE 14TH WEEK SOLUTIONS:

FINDING THE VALUE OF THE EXPRESSION:

1-

$$A = \left(3 + 2\sqrt{2}\right)^{-2} + \left(3 - 2\sqrt{2}\right)^{-2}$$

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

$$A = \frac{1}{9 + 12\sqrt{2} + 8} + \frac{1}{9 - 12\sqrt{2} + 8}$$

$$A = \frac{1}{17 + 12\sqrt{2}} + \frac{1}{17 - 12\sqrt{2}}$$

$$A = \frac{17 - 12\sqrt{2} + 17 + 12\sqrt{2}}{(17 + 12\sqrt{2})(17 - 12\sqrt{2})}$$

$$\underline{A = 34}$$

-2

SOLVING THE EQUATION:

$$\frac{(x - \sqrt{24}) \times (\sqrt{75} + \sqrt{50})}{\sqrt{75} - \sqrt{50}} = 1$$

$$\frac{(x - 2\sqrt{6}) \times (\sqrt{3} + \sqrt{2})}{\sqrt{3} - \sqrt{2}} = 1$$

$$\frac{(x - 2\sqrt{6}) \times (5\sqrt{3} + 5\sqrt{2})}{5\sqrt{3} - 5\sqrt{2}} = 1$$

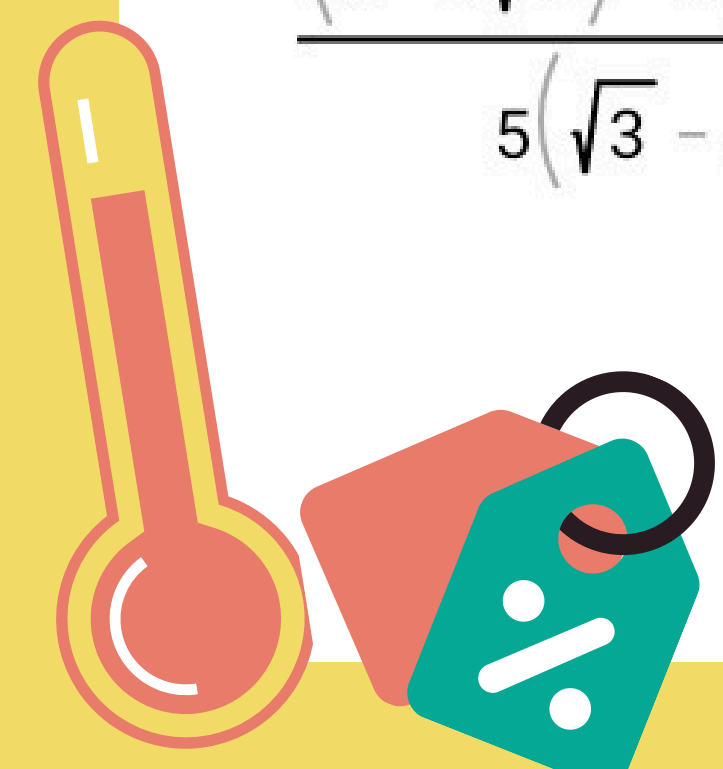
$$\frac{\sqrt{3}x + \sqrt{2}x - 2\sqrt{18} - 2\sqrt{12}}{\sqrt{3} - \sqrt{2}} = 1$$

$$\frac{(x - 2\sqrt{6}) \times 5(\sqrt{3} + \sqrt{2})}{5(\sqrt{3} - \sqrt{2})} = 1$$

$$\frac{\sqrt{3}x + \sqrt{2}x - 6\sqrt{2} - 4\sqrt{3}}{\sqrt{3} - \sqrt{2}} = 1$$

$$\sqrt{3}x + \sqrt{2}x - 6\sqrt{2} - 4\sqrt{3} = \sqrt{3} - \sqrt{2}$$

$$\sqrt{3}x + \sqrt{2}x = \sqrt{3} - \sqrt{2} + 6\sqrt{2} + 4\sqrt{3}$$



$$(\sqrt{3} + \sqrt{2})x = 5\sqrt{3} + 5\sqrt{2}$$

$$x = \frac{5\sqrt{3} + 5\sqrt{2}}{\sqrt{3} + \sqrt{2}}$$

$$x = \frac{5(\sqrt{3} + \sqrt{2})}{\sqrt{3} + \sqrt{2}}$$

$$x = 5$$

-3

SOLVING THE EQUATION:

$$\sqrt{4x+9} + \sqrt{4x+9} = 5 + \sqrt{7}$$

$$2\sqrt{4x+9} = 5 + \sqrt{7}$$

$$\sqrt{4x+9} = \frac{5}{2} + \frac{\sqrt{7}}{2}$$

$$\sqrt{4x+9} = \frac{5 + \sqrt{7}}{2}$$

$$4x+9 = \frac{(5 + \sqrt{7})^2}{4}$$

$$4x+9 = \frac{25 + 10\sqrt{7} + 7}{4}$$

$$4x+9 = \frac{32 + 10\sqrt{7}}{4}$$

$$4x+9 = \frac{2(16 + 5\sqrt{7})}{4}$$

$$4x+9 = \frac{16 + 5\sqrt{7}}{2}$$

$$4x = \frac{16 + 5\sqrt{7}}{2} - 9$$

$$4x = \frac{16 + 5\sqrt{7} - 18}{2}$$

$$4x = \frac{-2 + 5\sqrt{7}}{2}$$

$$x = \frac{-2 + 5\sqrt{7}}{8}$$

MATH LEAGUE 14TH WEEK SOLUTIONS:

