

نام و نام خانوادگی: کلاس: ۱۸ تکلیف شماره: ۱۸ پاسخنامه تشریحی

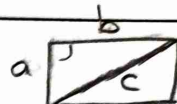
$$\frac{x}{y} = \frac{1+\sqrt{5}}{2} \rightarrow \frac{x}{4} = \frac{1+\sqrt{5}}{2} \rightarrow x = 2+2\sqrt{5}$$

$$\frac{S_{A'B'C'D'}}{S_{ABCD}} = \frac{a(4 \times (2+2\sqrt{5}))}{a(4 \times 5)} = \frac{2+2\sqrt{5}}{5}$$

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$$a^2 + b^2 = c^2$$

$$\frac{c}{b} = \frac{1+\sqrt{5}}{2} \rightarrow \frac{c^2}{b^2} = \frac{4+2\sqrt{5}}{4} \xrightarrow{a^2+b^2=c^2} \frac{a^2}{b^2} + 1 = \frac{4+2\sqrt{5}}{4}$$



$$\rightarrow \frac{a^2}{b^2} = \frac{2+2\sqrt{5}}{4} \rightarrow \frac{b^2}{a^2} = \frac{4}{2+2\sqrt{5}} = \frac{2}{1+\sqrt{5}}$$

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$$3a + \sqrt{2a^2 + 4a} = 2 \rightarrow \sqrt{2a^2 + 4a} = 2 - 3a \xrightarrow{\text{مربع کردن}} 2a^2 + 4a = 9a^2 + 12a + 4$$

$$\rightarrow 7a^2 - 14a + 4 = 0 \quad \begin{cases} a = \frac{2}{7} \\ a = 2 \end{cases}$$

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$$\rightarrow \frac{a+1}{a} = \frac{9}{2}$$

$$2\sqrt{x+1} = 10 - x \rightarrow -2\sqrt{x+1} = \sqrt{x+1} - (10-x)$$

$$2\sqrt{x+1} = 10 - x \xrightarrow{\text{مربع کردن}} 4(x+1) = 100 - 20x + x^2 \rightarrow x^2 - 24x + 94 = 0$$

$$\rightarrow x = \frac{24 \pm \sqrt{24^2 - 4 \times 94}}{2} = 12 \pm \sqrt{3} \rightarrow \text{پاسخ: } 12 - \sqrt{3}$$

$$x-1 > 0 \rightarrow x > 1$$

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$$\text{ابتدا عبارت را ساده می‌کنیم} \rightarrow \frac{-2\sqrt{2-x}}{2+x} = \frac{2-x}{5\sqrt{2-x}} \rightarrow 10x - 20 = 4 - x^2$$

$$\rightarrow x^2 + 10x - 24 = 0 \rightarrow (x+12)(x-2) = 0 \rightarrow x = -12, 2$$

$$x = -12 \rightarrow \text{پاسخ نهایی}$$

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$$x^2(1-x)^2\left(\frac{1}{x^2} + \frac{1}{(1-x)^2} = \frac{140}{9}\right) \Rightarrow (1-x^2) + x^2 = \frac{140}{9} x^2(1-x)^2$$

$$\Rightarrow 2x^2 - 2x + 1 = \frac{140}{9} (x-x^2)^2 \quad \left\{ \begin{array}{l} x^2 - x = t \rightarrow 2t + 1 = \frac{140}{9} + t^2 \\ \rightarrow 140t^2 - 18t + 9 = 0 \rightarrow t = \frac{38}{140} \pm \frac{3}{14} \end{array} \right. \quad \left\{ \begin{array}{l} x^2 - x = \frac{3}{10} \rightarrow x^2 - x - \frac{3}{10} = 0 \\ \rightarrow \Delta = -\frac{b}{a} = 1 \end{array} \right.$$

$$\rightarrow 140t^2 - 18t + 9 = 0 \rightarrow t = \frac{38}{140} \pm \frac{3}{14} \quad \left\{ \begin{array}{l} x^2 - x = \frac{3}{10} \rightarrow x^2 - x - \frac{3}{10} = 0 \\ \rightarrow \Delta = -\frac{b}{a} = 1 \end{array} \right.$$

$$x^2 - x = -\frac{3}{14} \rightarrow x^2 - x + \frac{3}{14} = 0 \rightarrow \Delta = -\frac{b}{a} = 1$$

مربع چهار ریشه
برابر است

$$-x^3 + 2x^2 + 25x - 100 \geq 0 \rightarrow (x-4)(x-5)(x+5) \geq 0$$

$$\begin{array}{c|ccc} x & -5 & 4 & 5 \\ \hline & + & - & + \end{array} \rightarrow x \in (-\infty, -5] \cup [4, 5]$$

$$-x^2 + 4x - 1 \geq 0 \rightarrow -(x-2)(x-2) \geq 0$$

$$\begin{array}{c|cc} x & 2 & 2 \\ \hline & - & + \end{array} \rightarrow x \in [2, 2]$$

$$\left. \begin{array}{l} x=4 \\ x=5 \end{array} \right\} \Rightarrow \sqrt{4} + \sqrt{14} = 4 + 2 \quad \checkmark$$

برای سه شنبه

تابع خطی است که از 3 تا 15 می رسد $y = 3$ $y = 2x+1$ $y = x+1$ $y = 15-x$

$$x \geq 1 \rightarrow 2x+1 = \frac{15-x}{2} \rightarrow x = 2, y = 5$$

$$1 > x > -2 \rightarrow 9+x = 15 \rightarrow x = 6$$

$$x \leq -2 \rightarrow -2x-1 = \frac{15-x}{2} \rightarrow x = -4, y = 7$$

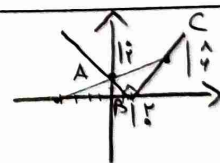
$$AB = \sqrt{(15-5)^2 + (-4-2)^2} = 2\sqrt{10}$$

$$y = \sqrt{x^2 - 4x + 4} \Rightarrow y = |x-2|, y = \frac{1}{2}x + 2$$

$$\frac{1}{2}x + 2 = x - 2 \rightarrow x = 8, y = 4$$

$$AB = \sqrt{(2-0)^2 + (0-2)^2} = 2\sqrt{2} \quad \{ \quad BC = \sqrt{(8-2)^2 + (4-0)^2} = 4\sqrt{2}$$

$$S_{ABC} = \frac{2\sqrt{2} \times 4\sqrt{2}}{2} = 12$$



$x+9$ ساعت : زمان x ساعت : سرعت

$$\frac{1}{x+9} + \frac{1}{x} = \frac{1}{20} \rightarrow 20x + 20x + 180 = x^2 + 9x$$

$$x^2 - 11x + 180 = 0 \rightarrow (x-34)(x+5) = 0 \rightarrow x = 34$$