

ÖZEL EGE LİSESİ
7. OKULLAR ARASI MATEMATİK YARIŞMASI
8. SINIF FİNAL CEVAPLARI

1-

$$6(a - 2b + c + d) + 9(a^2 + 4b^2 + c^2 + d^2) = -4$$

$$6a - 12b + 6c + 6d + 9a^2 + 36b^2 + 9c^2 + 9d^2 + 4 = 0$$

$$(9a^2 + 6a + 1) + (36b^2 - 12b + 1) + (9c^2 + 6c + 1) + (9d^2 + 6d + 1) = 0$$

$$(3a + 1)^2 + (6b - 1)^2 + (3c + 1)^2 + (3d + 1)^2 = 0$$

$$3a + 1 = 0 \Rightarrow a = -\frac{1}{3} \quad 6b - 1 = 0 \Rightarrow b = \frac{1}{6}$$

$$3c + 1 = 0 \Rightarrow c = -\frac{1}{3} \quad 3d + 1 = 0 \Rightarrow d = -\frac{1}{3}$$

$$\frac{a+c}{b+d} = \frac{-\frac{1}{3} - \frac{1}{3}}{\frac{1}{6} - \frac{1}{3}} = \frac{-\frac{2}{3}}{-\frac{1}{6}} = -\frac{2}{3} \cdot (-6) = 4$$

CEVAP : 4

2-

$$1 + \frac{1}{2!} + \frac{1}{3!} + \frac{1}{4!} + \dots + \frac{1}{49!} = A \quad \Rightarrow x = A - \frac{3}{2}$$

$$\frac{4}{3!} + \frac{5}{4!} + \frac{6}{5!} + \dots + \frac{51}{50!} - \frac{1}{50!} = \frac{3+1}{3!} + \frac{4+1}{4!} + \dots + \frac{50+1}{50!} - \frac{1}{50!}$$

$$= \frac{1}{2!} + \frac{1}{3!} + \frac{1}{3!} + \frac{1}{4!} + \frac{1}{4!} + \frac{1}{5!} + \dots + \frac{1}{49!} + \frac{1}{50!} - \frac{1}{50!}$$

$$= \frac{1}{2!} + 2\left(\frac{1}{3!} + \frac{1}{4!} + \frac{1}{5!} + \dots + \frac{1}{49!}\right) = \frac{1}{2} + 2\left(A - \frac{3}{2}\right) = \frac{1}{2} + 2A - 3 \Rightarrow = 2A - \frac{5}{2}$$

$$A - \frac{3}{2}$$

$$\text{CEVAP : } = 2A - \frac{5}{2}$$

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3-

$(K \cap M \cap F \cap İ \cap T)' \Rightarrow$ en çok olması gerekir.

$$= K' \cup M' \cup F' \cup İ' \cup T'$$

$$= 20 + 45 + 10 + 15 + 5 = 95$$

$$\%100 - \%95 = \%5 \Rightarrow \text{en az } \%5'i$$

CEVAP : % 5

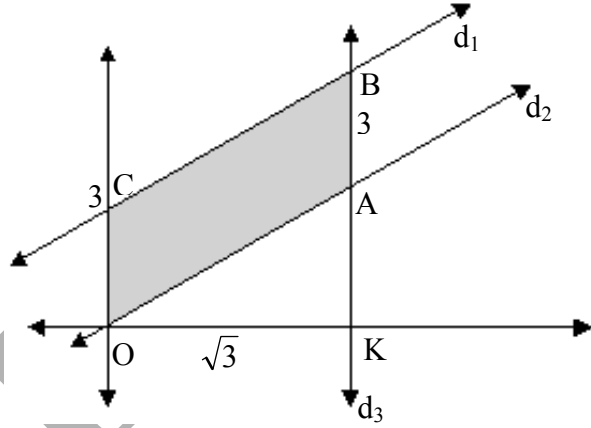
4-

$$d_1 // d_2 \quad x=0 \Rightarrow \begin{cases} 0-y+3=0 \\ y=3 \end{cases}$$

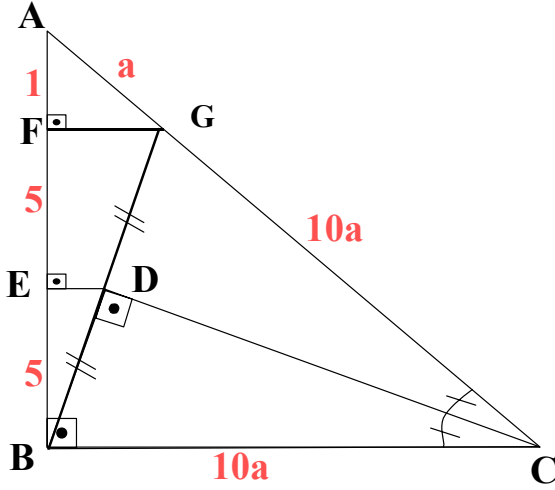
$$|OC| = 3br$$

$$|OK| = \sqrt{3}$$

$$\begin{aligned} A(OABC) &= |OC| \cdot |OK| \\ &= 3\sqrt{3} br^2 \end{aligned}$$



5-



$[FG] \perp [AB]$ Çizilir

$$\triangle BDE \sim \triangle BGF \quad (\text{A.A})$$

$$\frac{|BD|}{|BG|} = \frac{|BE|}{|BF|} = \frac{1}{2} \Rightarrow |EF| = 5$$

$$\triangle AFG \sim \triangle ABC \Rightarrow \frac{|AF|}{|FB|} = \frac{|AG|}{|GC|}$$

$\triangle GBC$ ikizkenar üçgen,

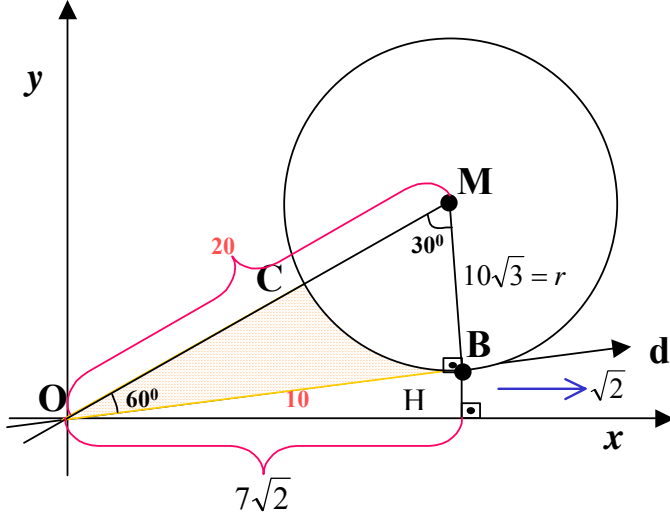
$$\frac{|AG|}{|AC|} = \frac{1}{11},$$

$$\frac{|AC|}{|BC|} = \frac{11a}{10a} = \frac{11}{10}$$

$$\text{CEVAP : } \frac{|AC|}{|BC|} = \frac{11}{10}$$

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6-



$$|OB| = 10 \text{ ise,}$$

$$|MB| = 10\sqrt{3} = r \text{ ise,}$$

\triangle
OHB de :

$$\begin{aligned} |OB|^2 &= (7\sqrt{2})^2 + (\sqrt{2})^2 \\ &= 98 + 2 \\ &= 100 \end{aligned}$$

$$|OB| = 10$$

\triangle
OMB de :

$$\begin{aligned} 20^2 - 10^2 &= |MB|^2 \\ 200 &= |MB|^2 = r^2 \\ r &= 10\sqrt{3} \end{aligned}$$

buradan

$$m(\widehat{MOB}) = 60^\circ$$

$$m(\widehat{OMB}) = 30^\circ \text{ bulunur}$$

$$T.A = A(\widehat{OMB}) - A(\widehat{CMB})$$

$$= \frac{10\sqrt{3} \cdot 10}{2} - \frac{\pi(10\sqrt{3})^2 \cdot 30}{360}$$

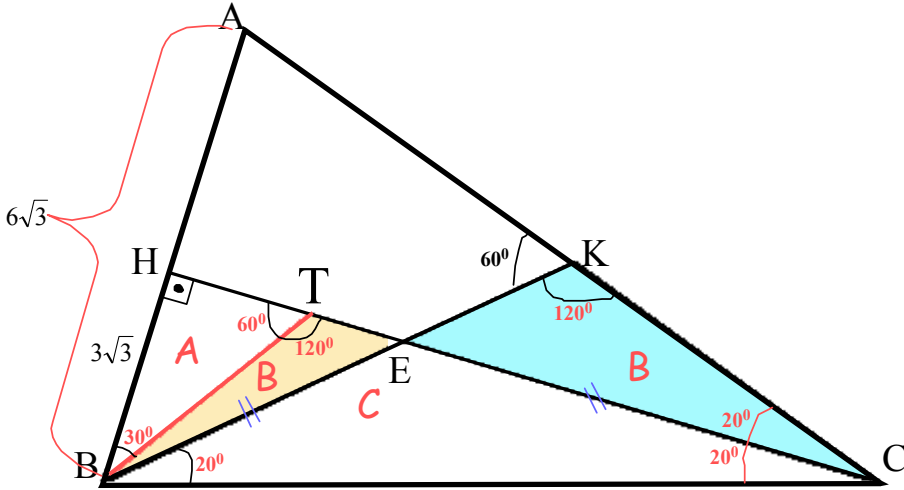
$$= 50\sqrt{3} - \frac{75\pi}{3}$$

$$= 50\sqrt{3} - 25\pi$$

$$\text{CEVAP : } 50\sqrt{3} - 25\pi$$

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7-



$$A(\text{BHC}) - A(\text{BKC}) = ?$$

$$\triangle BTE \cong \triangle CKE \quad (\text{A.K.A})$$

$$A(\text{TEB}) = A(\text{EKC})$$

$$A(\text{BHC}) = A + B + C$$

$$A(\text{BKC}) = B + C$$

$$A(\text{BHC}) - A(\text{BKC}) = A$$

$$\triangle \text{AHT} \text{ den } \Rightarrow |HT| = 3$$

$$A = \frac{3 \cdot 3\sqrt{3}}{2} = \frac{9\sqrt{3}}{2} \text{ br}^2$$

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$$\left. \begin{array}{l} 8- \quad x - \frac{85}{\sqrt{x}} = ? \\ x - \sqrt{x} = 85 \Rightarrow \sqrt{x} - 1 = \frac{85}{\sqrt{x}} \end{array} \right\} \quad x - \frac{85}{\sqrt{x}} = x - (\sqrt{x} - 1) = x - \sqrt{x} + 1 = 86$$

85

9-

$$\overline{a b c d e f}$$

$$a + b + c + d + e + f = 9$$

$$\frac{14!}{5! \cdot 9!} = \frac{14 \cdot 13 \cdot 12 \cdot 11 \cdot 10 \cdot 9!}{5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 \cdot 9!} = 2002$$

CEVAP : 2002

10-

$$(\sqrt[3]{5 + \sqrt{x}} + \sqrt[3]{5 - \sqrt{x}})^3 = (2)^3$$

$$5 + \sqrt{x} + 3\sqrt[3]{(25 - x) \cdot (5 + \sqrt{x})} + 3\sqrt[3]{(25 - x) \cdot (5 - \sqrt{x})} + 5 - \sqrt{x} = 8$$

$$10 + 3\sqrt[3]{(25 - x)} \cdot \underbrace{(\sqrt[3]{5 + \sqrt{x}} + \sqrt[3]{5 - \sqrt{x}})}_2 = 8$$

$$3 \cdot \sqrt[3]{(25 - x)} = -2$$

$$\left(\sqrt[3]{(25 - x)}\right)^3 = \left(-\frac{1}{3}\right)^3 \Rightarrow 25 - x = -\frac{1}{27}$$

$$x = 25 + \frac{1}{27} \Rightarrow x = \frac{676}{27}$$

CEVAP : $x = \frac{676}{27}$