

6 10 puan	$x, y, z \in \mathbb{Z}^+ \wedge 250 < a < 322$ $a = 2x - 3 = 5y + 2 = 7z - 17 \rightarrow a = ?$ $a + 3 = 2x = 5y + 5 = 7z - 14$ (2) $a + 3 = 2x = 5(y + 1) = 7(z - 12)$ (2) $\min(a + 3) = \text{EKOK}(2, 5, 7) = 70$ (2)
7 10 puan	$A = 2 - \frac{1}{2 - \frac{1}{2 - \frac{1}{\ddots}}}$ ve $B = 2 + \frac{15}{2 + \frac{15}{2 + \frac{15}{\ddots}}}$ $\rightarrow A - B = ?$ $A = 2 - \frac{1}{A}$ (2) $A^2 = 2A - 1$ $A^2 - 2A + 1 = 0$ $A = 1$ (1) $B = 2 + \frac{15}{B}$ (2) $B^2 = 2B + 15$ $B^2 - 2B - 15 = 0$ $\frac{B}{B} \quad \frac{-5}{3}$ $(B - 5) \cdot (B + 3) = 0$ (2) $B = 5$ (2) $A - B = 1 - 5 = -4$ (1)
8 10 puan	$3 \cdot 6^{2005} + 4 \cdot 257^{2006} \equiv ? \pmod{10}$ <ul style="list-style-type: none"> $6 \equiv 6 \pmod{10}$ $6^2 \equiv 6 \pmod{10}$ $6^3 \equiv 6 \pmod{10}$ \vdots $6^{2005} \equiv 6 \pmod{10}$ (2) <ul style="list-style-type: none"> $257 \equiv 7 \pmod{10}$ $257^2 \equiv 9 \pmod{10}$ $257^3 \equiv 3 \pmod{10}$ $257^4 \equiv 1 \pmod{10}$ (2) $2006 \div 4 = 501 \text{ } \frac{2}{2}$ $257^{2006} \equiv 9 \pmod{10}$ (2) $3 \cdot 6^{2005} + 4 \cdot 257^{2006} \equiv x$ $3 \cdot 6 + 4 \cdot 9 \equiv x$ (2) (1) $18 + 36 \equiv 54 \equiv x$ $x \equiv 4 \pmod{10}$ (2)
9 10 puan	$\frac{1}{12} + \frac{1}{13} + \frac{1}{14} + \frac{1}{15} = A$ ve $\frac{13}{12} + \frac{14}{13} + \frac{15}{14} + \frac{16}{15} = B \left(\frac{11}{12} + \frac{12}{13} + \frac{13}{14} + \frac{14}{15} \right)$ ise B'nin A cinsinden değerini bulun. $1 + \frac{1}{12} + 1 + \frac{1}{13} + 1 + \frac{1}{14} + 1 + \frac{1}{15} = B \cdot \left(1 - \frac{1}{12} + 1 - \frac{1}{13} + 1 - \frac{1}{14} + 1 - \frac{1}{15} \right)$ (3) $4 + A = B(4 - A)$ (2) $B = \frac{4 + A}{4 - A}$ (2)
10 10 puan	$\mathbb{Z}/7$ 'de karekökü olmayan sayıların toplamı a ise, $\mathbb{Z}/7$ 'de a'nın toplama işlemine göre tersini bulun. <ul style="list-style-type: none"> $0^2 = 0$ $1^2 = 1$ $2^2 = 4$ $3^2 = 2$ $4^2 = 2$ $5^2 = 4$ $6^2 = 1$ $\rightarrow \bar{3}, \bar{5}, \bar{6}$ 'nın karekökü yok. (3) (1) $a = \bar{3} \oplus \bar{5} \oplus \bar{6} = \bar{0}$ (1) $\bar{0} \oplus a^{-1} = a^{-1} \oplus \bar{0} = \bar{0}$ $a^{-1} = \bar{0}$ (2) $\bar{0}, \bar{1}, \bar{2}, \bar{4}$ lün karekökü var. (4) (1)