

Ad Soyad:

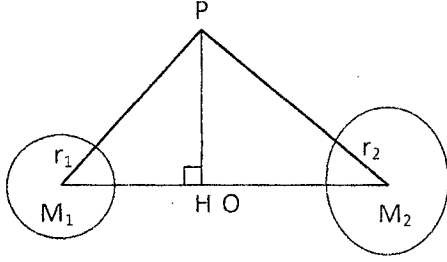
Numara:

02.01.2020

MAT 333 GEOMETRİ FİNAL SINAVI SORULARI

1. Bir çevre açının ölçüsü kenarları arasında kalan yayın derece cinsinden değerini yarısına eşittir, ispatlayınız.

2.



P noktası her iki çembere göre aynı

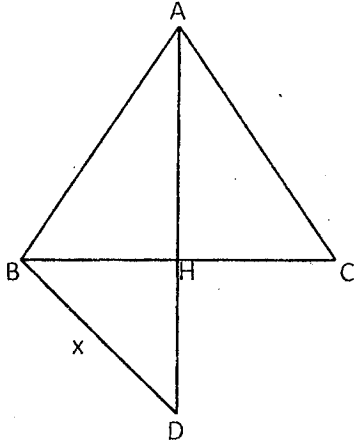
kuvvette bir nokta ve O ise merkez noktalarının orta noktasıdır. Buna göre

$$|OH| = \frac{r_2^2 - r_1^2}{2|M_1M_2|} \text{ dir, gösteriniz.}$$

3. Kosinüs kuralını ifade ve ispat ediniz.

4. Dik koordinat düzleminde verilen $A(1,5)$, $B(x,y)$, $C(10,8)$, $D(2,8)$ noktalarını köşe kabul eden ABCD ikizkenar yamuğunun bütün köşeleri $[AB]$ çaplı çemberin üzerindedir. Buna göre $x+y=?$

5.



$$[AB] \perp [AC]$$

$$[AB] \perp [BD]$$

$$[AD] \perp [BC]$$

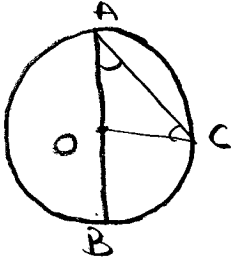
$$|AH| = 4 \text{ cm}, |HC| = 8 \text{ cm} \Rightarrow |BD| = x \text{ kaç cm dir?}$$

BAŞARILAR

Dr. Öğr.Üyesi. Fatma GÜLER

GEOMETRİ FINAL SINAVI CEVAP ANAHTARI

1) 1. Durum: Çevre açının bir kenarı merkezden geçerse



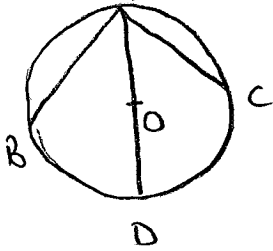
$$m(\hat{A}) = \frac{1}{2} m(\widehat{BC})$$

$$m(\widehat{BOC}) = m(\hat{A}) + m(\hat{C}) \text{ ve } m(\hat{A}) = m(\hat{C})$$

$$m(\widehat{BOC}) = 2m(\hat{A}) \quad m(\widehat{BOC}) = m(\widehat{BC})$$

$$m(\hat{A}) = \frac{1}{2} m(\widehat{BC}) \text{ dir.}$$

2. Durum: Çemberin merkezi çevre açının kenarları arasında olsun.



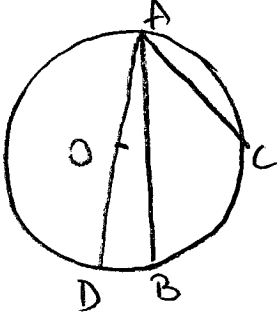
1. Durumdan

$$m(\hat{BAD}) = \frac{1}{2} m(\widehat{BD})$$

$$m(\hat{DAC}) = \frac{1}{2} m(\widehat{DC})$$

$$+ \quad \hline m(\hat{BAC}) = \frac{1}{2} m(\widehat{BC}) \text{ dir.}$$

3. Durum: Çemberin merkezi çevre açının kenarları dışında ise



1. Durumdan

$$m(\hat{DAB}) = \frac{1}{2} m(\widehat{DB})$$

$$m(\hat{DAC}) = \frac{1}{2} m(\widehat{DC})$$

$$\hline m(\hat{BAC}) = m(\hat{DAC}) - m(\hat{DAB})$$

$$\Rightarrow \frac{1}{2} (m(\widehat{DC}) - m(\widehat{DB})) = \frac{1}{2} m(\widehat{BC}) = m(\hat{BAC})$$

2) $\widehat{PM_2H}$ ve $\widehat{PM_1H}$ Pisagordan

$$|PM_2|^2 = |PH|^2 + |HM_2|^2$$

$$|PM_1|^2 = |PH|^2 + |HM_1|^2$$

$$|PM_2|^2 - |PM_1|^2 = |HM_2|^2 - |HM_1|^2$$

$$= (|OH| + |OM_2|)^2 - (|M_1O| - |OH|)^2$$

$$= \cancel{|OH|^2} + 2|OH||OM_2| + \cancel{|OM_2|^2} - \underbrace{\cancel{|M_1O|^2}}_{\text{orta nokta}} + 2|M_1O| \cancel{|OH|^2}$$

$$= 2|OH| (|OM_2| + |OM_1|)$$

P noktası kuvvet noktası olduğundan

$$(|PM_1| - r_1)(|PM_1| + r_1) = (|PM_2| - r_2)(|PM_2| + r_2)$$

$$|PM_1|^2 - r_1^2 = |PM_2|^2 - r_2^2$$

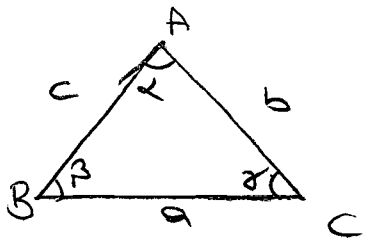
$$\Rightarrow |PM_1|^2 - |PM_2|^2 = r_1^2 - r_2^2 \text{ dir.}$$

$$\Rightarrow |PM_2|^2 - |PM_1|^2 = 2|OH| |M_1M_2|$$

$$r_1^2 - r_2^2 = 2|OH| |M_1M_2|$$

$$|OH| = \frac{r_1^2 - r_2^2}{2|M_1M_2|} \text{ dir.}$$

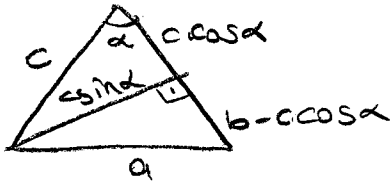
3)



$$a^2 = b^2 + c^2 - 2bc \cos \alpha$$

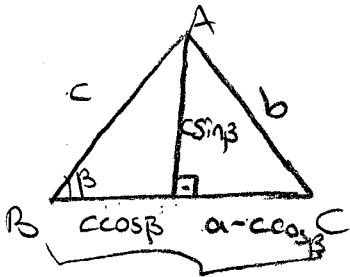
$$b^2 = a^2 + c^2 - 2ac \cos \beta$$

$$c^2 = a^2 + b^2 - 2ab \cos \gamma \quad \text{dir.}$$



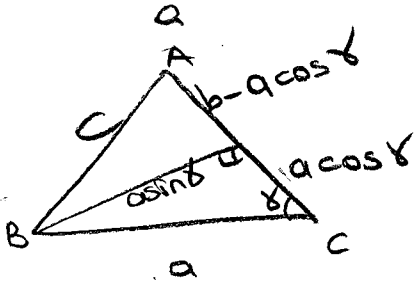
$$a^2 = c^2 \sin^2 \alpha + (b - c \cos \alpha)^2$$

$$a^2 = b^2 + c^2 - 2bc \cos \alpha$$



$$b^2 = c^2 \sin^2 \beta + (a - c \cos \beta)^2$$

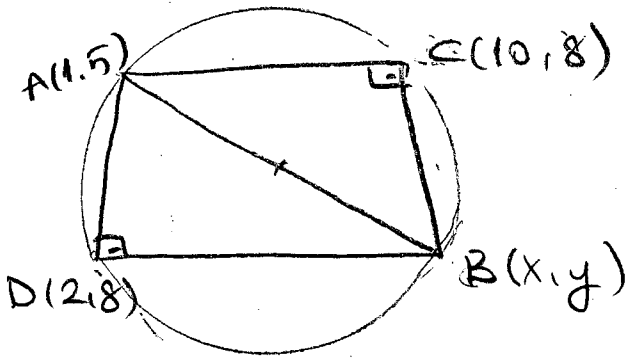
$$= a^2 + c^2 - 2a \cdot c \cos \beta$$



$$c^2 = a^2 \sin^2 \beta + (b - a \cos \beta)^2$$

$$c^2 = a^2 + b^2 - 2ab \cos \beta$$

4)



$[AB]$ çap o olduğundan
 $m(\hat{C}) = m(\hat{D}) = 90^\circ$ dir.

Diğer kesilen doğrular eğimleri çarpımı -1 olur.

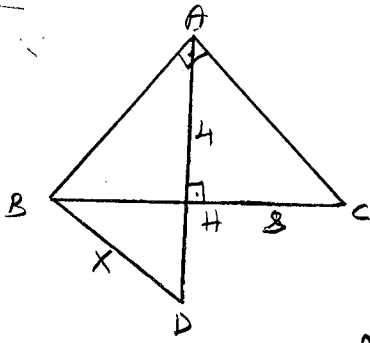
$$[AC] \perp [BD] \Rightarrow \left(\frac{8-5}{10-1} \right) \left(\frac{y-8}{x-10} \right) = -1 \Rightarrow 3x + y = 38$$

$$[AD] \perp [BC] \Rightarrow \left(\frac{8-5}{2-1} \right) \left(\frac{y-8}{x-2} \right) = -1 \Rightarrow 3y + x = 26$$

$$\Rightarrow 4x + 4y = 64$$

$$\Rightarrow x + y = 16$$

5.

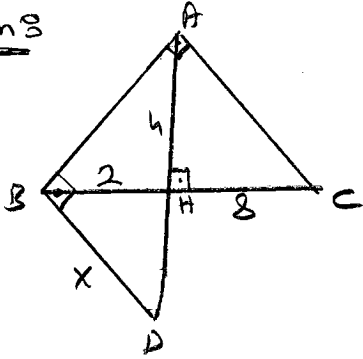


$$\begin{aligned} [AB] &\perp [AC] \\ [AB] &\perp [BD] \\ [AD] &\perp [BC] \end{aligned}$$

$$\begin{aligned} |AH| &= 4 \text{ cm} \\ |HC| &= 8 \text{ cm} \end{aligned}$$

$|BD| = x$ kaç cm dir?

Çözüm



ABC üçgeninde

$$|AH|^2 = |BH| \cdot |HC|$$

$$4^2 = |BH| \cdot 8$$

$$\Rightarrow |BH| = 2 \text{ cm}$$

ABD üçgeninde

$$|BH|^2 = |AH| \cdot |HD|$$

$$\Rightarrow 2^2 = 4 \cdot |HD|$$

$$\Rightarrow |HD| = 1 \text{ cm}$$

$$x^2 = 1 \cdot 5 \Rightarrow x^2 = 5$$

$$\Rightarrow x = \sqrt{5}$$