

Unit 10: Solving for unknowns

2 unknowns

↳ 2 equations
 paragraph in sentence to translate

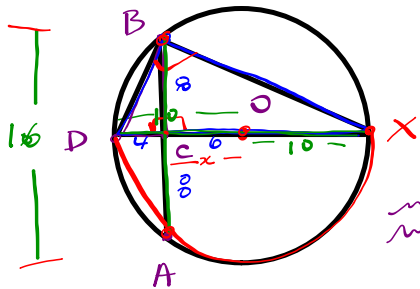
- theorems
- equation for function

$$(x-h)^2 + (y-k)^2 = r^2$$

• properties of graph

P 10.3

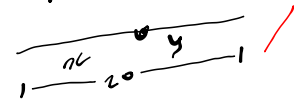
LABEL



Th 71
 $BD = \sqrt{8^2 + 4x^2}$

$m \overline{OD} = 10 \text{ cm}$
 $m \overline{AB} = 16 \text{ cm}$

$x + y = 20$



find \overline{CO}
 \overline{BD}

write Th 81 using above letters

$$\overline{BC} \times \overline{CA} = \overline{DC} \times \overline{CX}$$

$$8 \times 8 = (10 - x) \cdot (x + 10)$$

$$64 = 10x - x^2 - 10x + 100$$

$$x^2 = 100 - 64$$

$$x^2 = \sqrt{36}$$

$x = +6$ or $x = -6$

- extending lines
- drawing lines
- angles
- consider angles:
 - inscribed
 - exterior
 - interior/central

① $(x+2)^2 + (y-3)^2 = 4$
 $(x-h)^2 + (y-k)^2 = r^2$

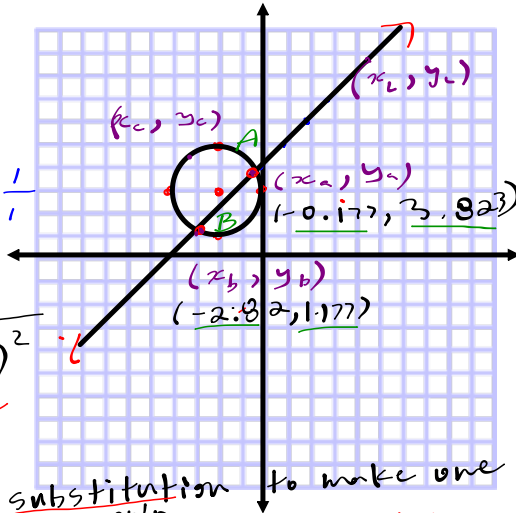
② $y = x + 4$
 $y = mx + b$

$C(-2, 3)$

$m = \frac{rise}{run} = \frac{1}{1}$

Determine \overline{AB} distance formula

$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
 distance between 2 points



$(x+2)^2 + (x+4-3)^2 = 4$

$(x+2)(x+2) + (x+1)(x+1) - 4 = 0$
 $x_1 = -0.177$ $x_2 = -2.823$

iii. sub the value of x into one of original equation and evaluate for y

$y = x + 4$

$y = -0.177 + 4$

$y_1 = 3.823$

$y_2 = 1.177$

use substitution to make one unknown.

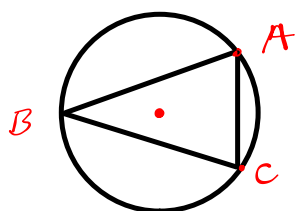
i. isolate y in one equation

ii. sub value of y in other equation

$ax^2 + bx + c$

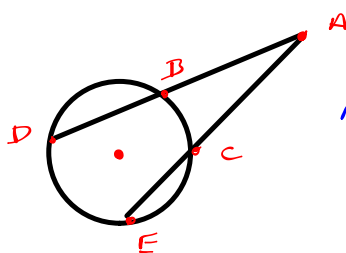
use quad formula

use distance formula



$\hat{A}C = 97^\circ$
 $\hat{B}C = 134^\circ$
 $\overline{AB} = 60 \text{ units}$

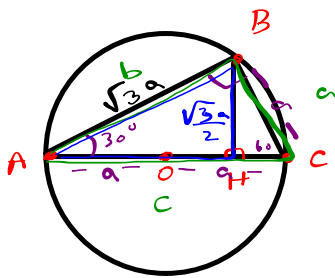
find
 $m\overline{AC}$
 $m\overline{BC}$



$\overline{CE} = 12 \text{ units}$
 $\overline{AB} \times \overline{AD} = 160 \text{ units}$

find \overline{AE}

- LABEL**
- theorems / write out equation before substituting in values.
 - identify elements to pick • correct theorem.
 - write 2nd unknown in terms of 1st.



if $\angle BAC = 30^\circ$
 and the radius is a units
 find the value of BH in
 terms of a .

$30^\circ / 60^\circ / 90^\circ$ Th 14

$$\overline{AC} = a + a$$

$$\overline{AC} = 2a$$

$$\overline{BC} = \frac{1}{2} \overline{AC}$$

$$\overline{BC} = \frac{1}{2} \cdot 2a$$

$$\overline{BC} = a$$

T 91: $\overline{AC} \times \overline{BH} = \overline{AB} \times \overline{BC}$

$$\cancel{2a} \times \overline{BH} = \frac{\sqrt{3}a \times a}{\cancel{2a}}$$

$$\boxed{\overline{BH} = \frac{\sqrt{3}a}{2}}$$

solve AB

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

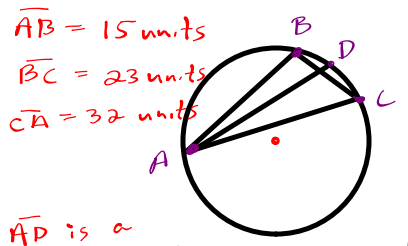
$$(2a)^2 = a^2 + (AB)^2$$

$$4a^2 - a^2 = AB^2$$

$$\sqrt{3a^2} = \sqrt{AB^2}$$

$$\sqrt{3} \sqrt{a^2} = AB$$

$$\sqrt{3} a = AB$$

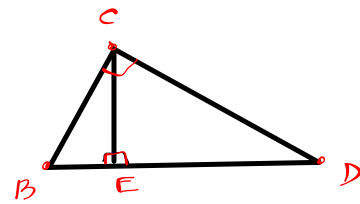


$\overline{AB} = 15$ units
 $\overline{BC} = 23$ units
 $\overline{CA} = 32$ units

\overline{AD} is a bisector of $\angle BAC$

find $m\widehat{BD}$

- LABEL**
- theorems / write out equation before substituting in values.
 - identify elements to pick • correct theorem.
 - write 2nd unknown in terms of 1st.



$\overline{EC} = 12$ units

$\overline{BD} = 25$ units

find \overline{BC}

look at ex 4 and 5 p 10.20