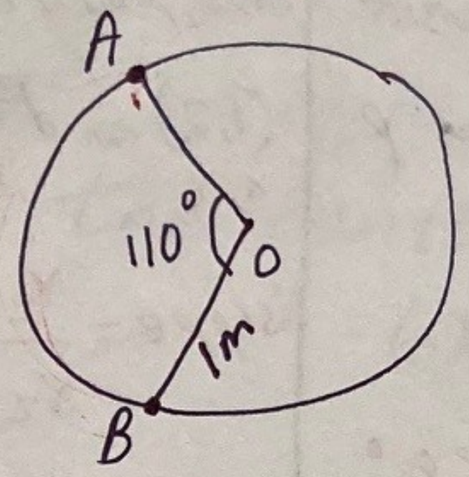
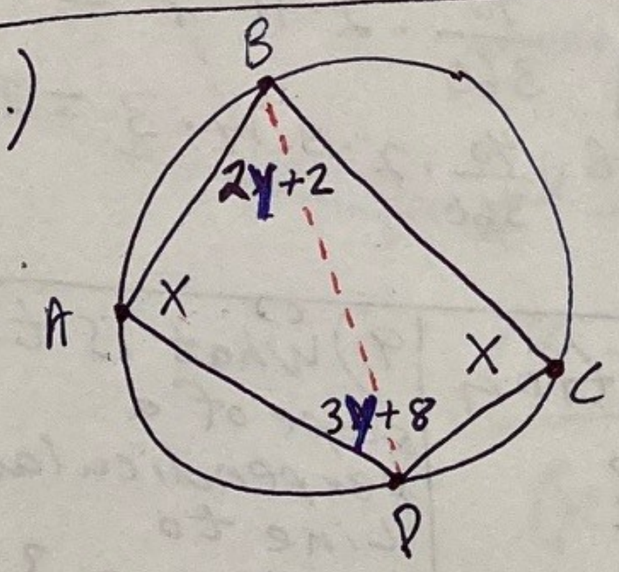
TEST REVIEW Circles

1. 

What is the length of $\overset{\frown}{AB}$?

(15.1)

$\frac{110}{360} \cdot 2\pi r = 0.3055 \cdot 2 \cdot 3.14 \cdot 1 = \underline{1.92m}$

2.) 

(15.2)

a) What is the measure of ∠DAB?

b) What is the measure of ∠CDA?

c) What type of line is ------ ?

d) Explain your answer in C?

a) $2X = 180$ b) $2Y+2+3Y+8 = 180$
$X = 90$ $5Y+10 = 180$
$-10 \quad -10$
$\frac{5Y}{5} = \frac{170}{5} \rightarrow Y = 34$ $\angle CDA = 3 \cdot 34 + 8 = 110°$

c) diameter.
d) since $X = 90°$. That $\overset{\frown}{BD} = 180°$. That means --- goes through the middle point of the circle.

3.) Find the center and radius of the circle. Graph the circle.

$x^2 - 6x + y^2 - 6y + 14 = 0$

$x^2 - 6x + \left(\frac{-6}{2}\right)^2 + y^2 - 6y + \left(\frac{-6}{2}\right)^2 + 14 = 0 + \left(\frac{-6}{2}\right)^2 + \left(\frac{-6}{2}\right)^2$

$x^2 - 6x + 9 + y^2 - 6y + 9 + 14 = 0 + 9 + 9$

$-14 \quad -14$

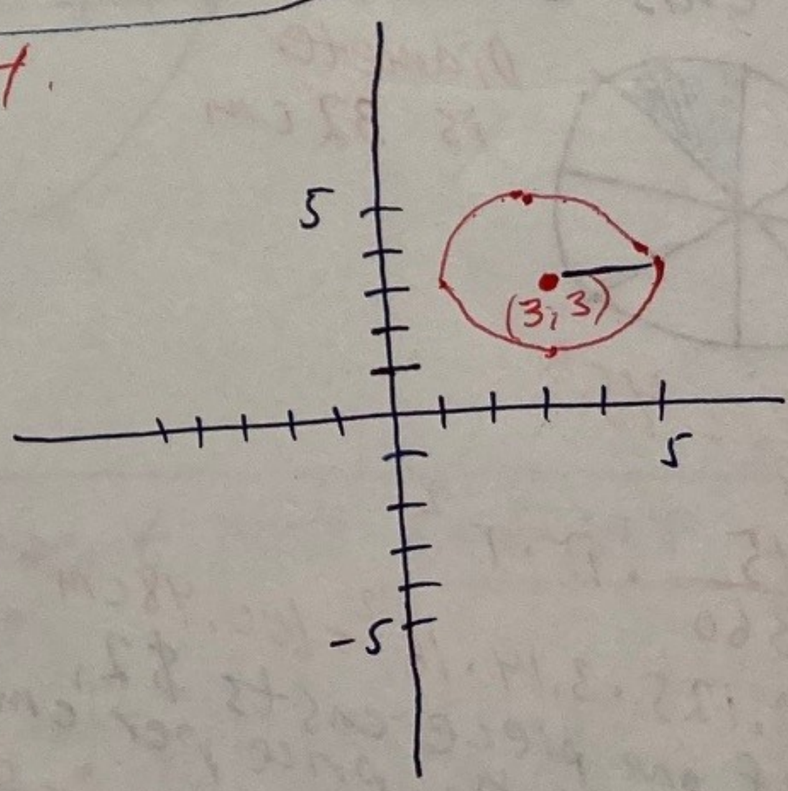
$(x-3)(x-3) + (y-3)(y-3) = 4$

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

$h = 3 \quad k = 3 \quad r = \sqrt{4} = 2$

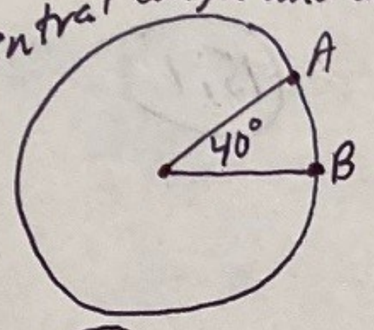
center: (3,3)

radius: 2



4.) What are the measures?

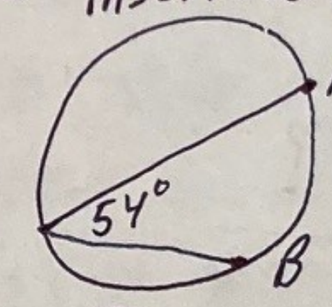
central angle and arc



$\overset{\frown}{AB}$ =

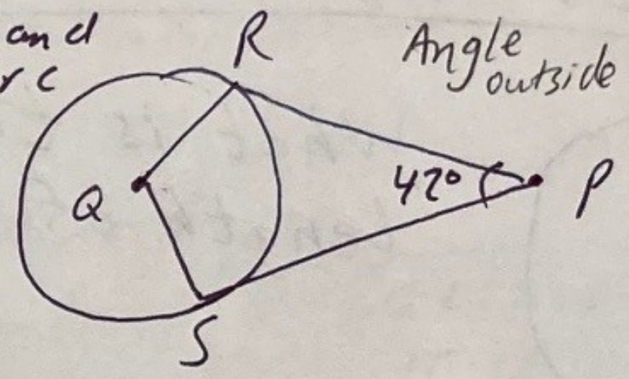
40°

Inscribed angle and arc



$\overset{\frown}{AB}$ =

54 · 2 = 108°

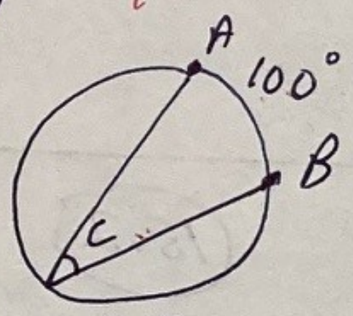


∠Q =

180 − 42 = 138°

supplementary

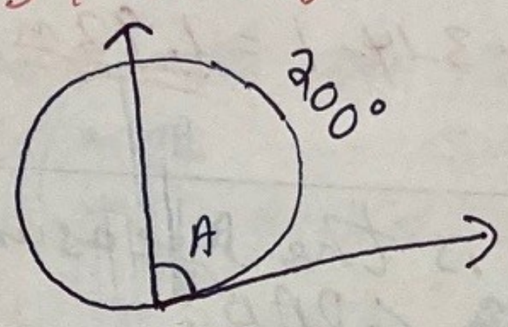
(15.1)



angle on edge of circle

∠C =

$\frac{100}{2} = 50°$



∠A =

$\frac{200}{2} = 100°$

10.) slope between two points?

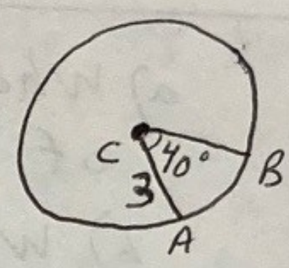
(1,2) and (7,4)

x_1, y_1 x_2, y_2

$slope = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4-2}{7-1}$

$= \frac{2}{6} = \frac{1}{3}$

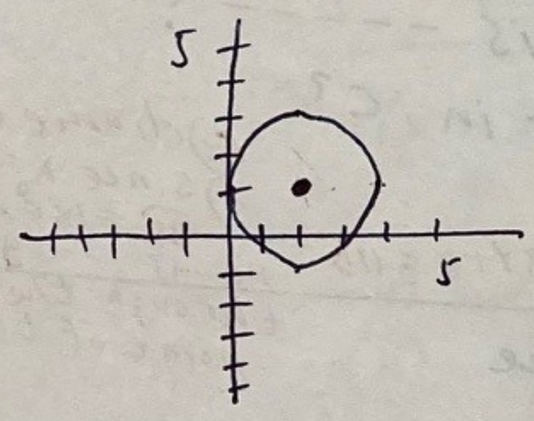
11.) Length of $\overset{\frown}{AB}$? (15.1)



$\frac{40}{360} \cdot 2 \cdot \pi \cdot r =$

$\frac{40}{360} \cdot 2 \cdot 3.14 \cdot 3 = 2.09$

5.)



(17.1)

What is the equation to this circle?

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

$(x-2)^2 + (y-1)^2 = 4$

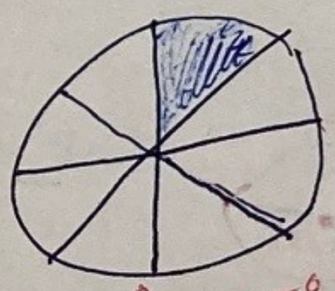
$h=2 \quad k=1 \quad r=2$

9.) What is the slope of a perpendicular line to $y = \frac{4}{5}x + 2$?

Use the opposite sign and the reciprocal:

$-\frac{5}{4}x$

6.) Area of 1 piece of this cake: (16.3)



Diameter is 32 cm

$\frac{360^\circ}{8} = 45^\circ$

$\frac{45}{360} \cdot \pi \cdot r^2$

$0.125 \cdot 3.14 \cdot 16^2 = 100.48 cm^2$

If one piece costs $2, what is the price per cm^2?

$\frac{2}{100.48} = \$0.0199$ or ≈ 2 cents

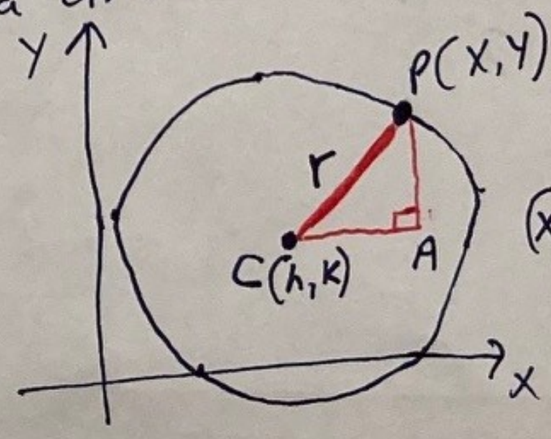
7.) What are the relationships between inscribed angles, radii and chords?

Inscribed angle = formed by two chords with a common endpoint

Radius = A line from the center of the circle to its perimeter.

Chord = a straight line segment whose endpoints both lie on the circle.

8.) How can we use the Pythagorean distance formula to derive the equation of a circle?



$CA = x - h$

$PA = y - k$

Hence

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

EXTRA REVIEW PROBLEMS

(DAY 2) 173

(17.1)

- Complete the square to find the center and the radius.

$$x^2 - 6x + y^2 = 7$$

NOTE: LEAVE x^2 AS IT IS SINCE ONLY ONE Y-TERM

(NOTE: SOMETIMES THE RADIUS IS A DECIMAL NUMBER, NOT A WHOLE NUMBER. GRAPH AS WELL AS YOU CAN!)

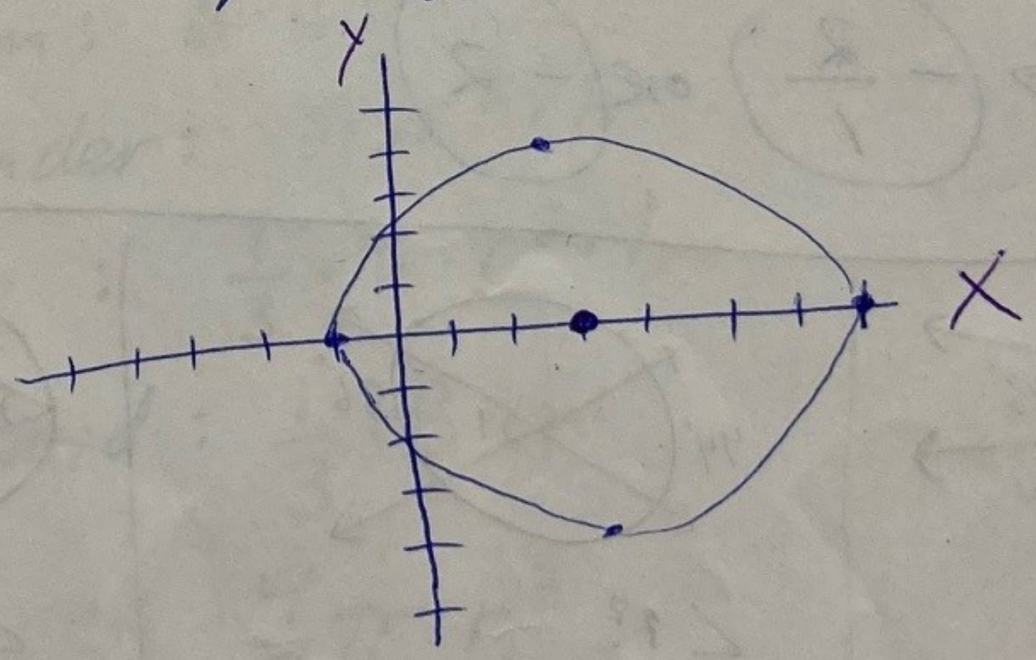
$$\rightarrow x^2 - 6x + \left(\frac{-6}{2}\right)^2 + y^2 = 7 + \left(\frac{-6}{2}\right)^2$$

$$\underbrace{x^2 - 6x + 9} + y^2 = 7 + 9$$

$$(x-3)^2 + y^2 = 16$$

$h = 3$ (x) $\quad k = 0$ (y) $\quad r = \sqrt{16} = 4$

Graph it:



(16.2) Convert to degrees

$$\frac{5\pi}{8}$$

$$\frac{5\pi}{8} \cdot \frac{180}{\pi} = \frac{900}{8} = 112.5^\circ$$

Convert to radians

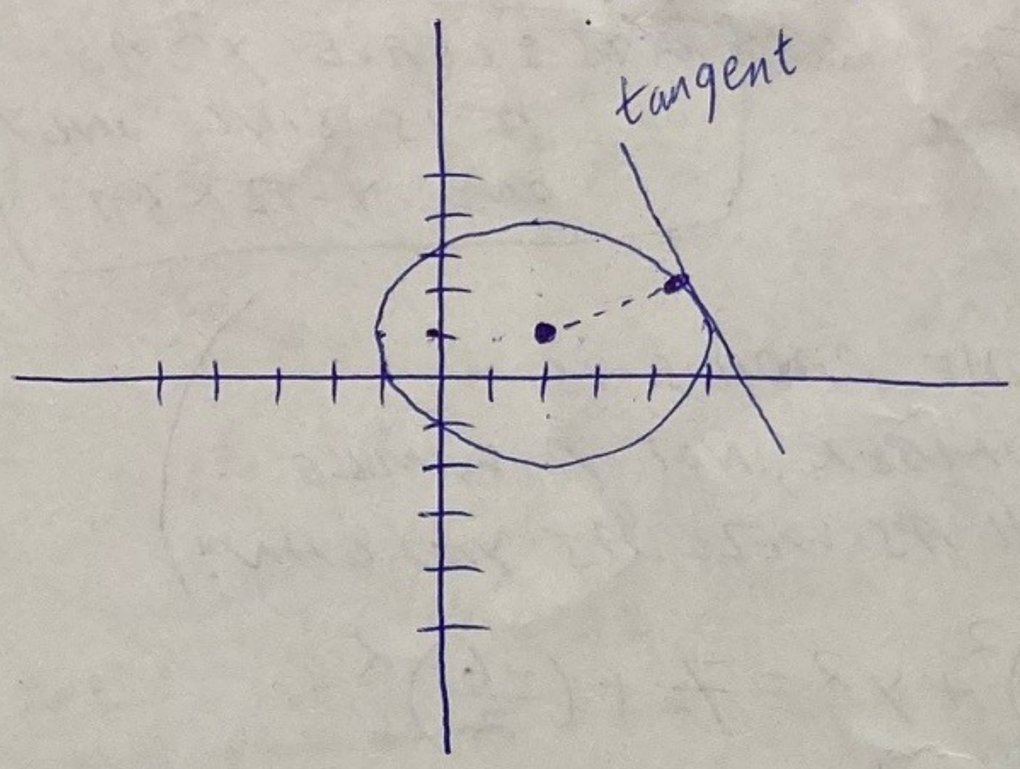
12°

$$12 \cdot \frac{\pi}{180} \overset{\div 12}{\underset{\div 12}{=}} 1 \cdot \frac{\pi}{15} = \frac{\pi}{15}$$

Remember: $\pi = 180^\circ$

$2\pi = 360^\circ$

( ) a) Draw the radius from point (2,1) to point (4,2) and determine the slope.

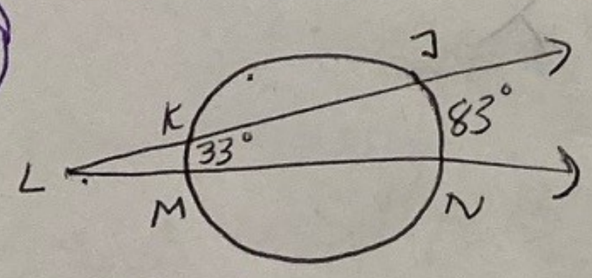


slope = $\frac{y_2 - y_1}{x_2 - x_1} = \frac{2-1}{4-2} = \frac{1}{2}$

b) Draw the tangent to point (4,2) and determine the slope of that line.

$+\frac{1}{2} \rightarrow -\frac{2}{1}$ OR -2

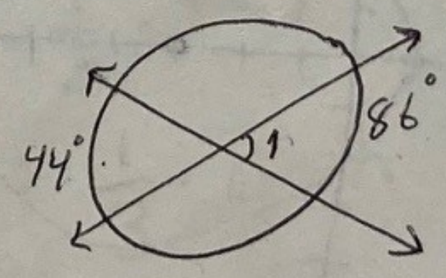
15.5



$\angle L$?

$\frac{1}{2} \cdot (83-33) =$

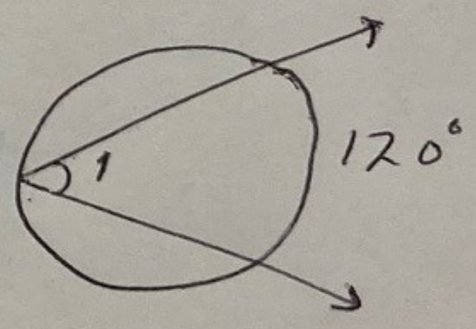
$\frac{1}{2} \cdot 50 = 25°$



$\angle 1$?

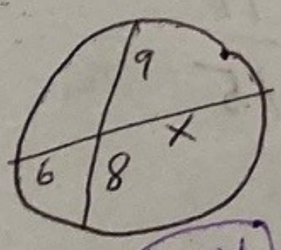
$\frac{1}{2} \cdot (44+86) =$

$\frac{1}{2}(130) = 65°$



$\angle 1$?

$\angle 1 = \frac{1}{2} \cdot 120 = 60°$



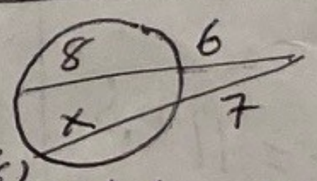
15.4

x?

$6 \cdot x = 9 \cdot 8$

$6x = 72$

$x = 12$



x?

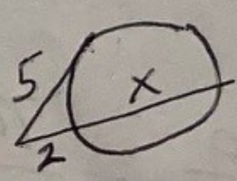
$(x+7) \cdot (7) = (8+6)(6)$ whole • outside

$7x + 49 = 84$

$-49 \quad -49$

$7x = 35$

$x = 5$



x?

$(x+2) \cdot (2) = 5^2$

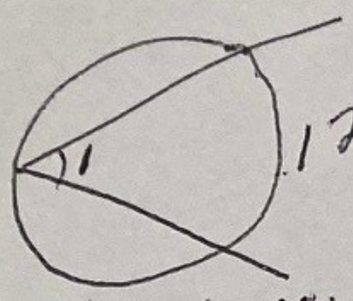
$2x + 4 = 25$

$-4 \quad -4$

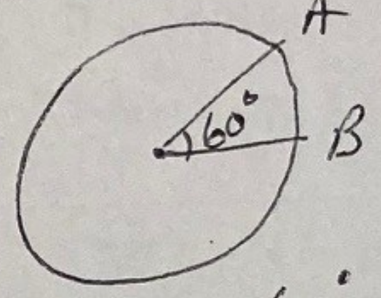
$2x = 21$

$x = 10.5$

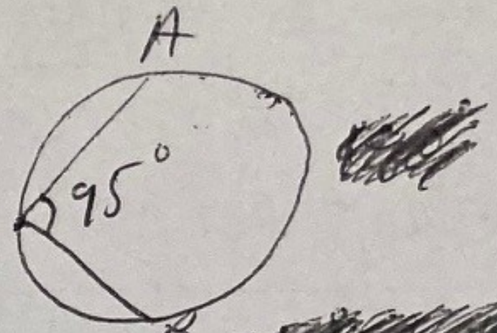
Circles



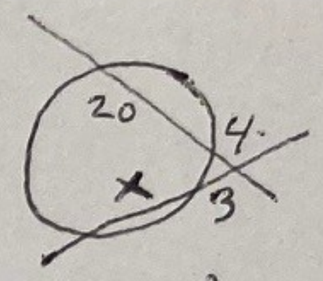
$\angle 1 = 60°$ (half)



$\overset{\frown}{AB} = 60°$



$\overset{\frown}{AB} = 190°$ (double)



$4 \cdot (20+4) = 3 \cdot (x+3)$

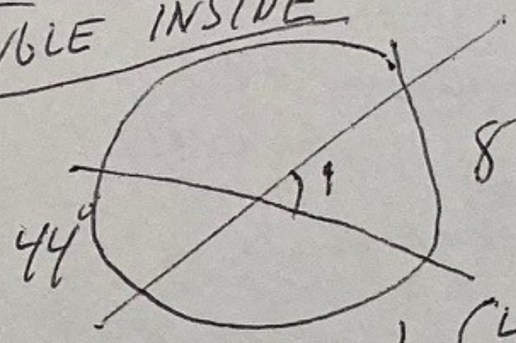
$4 \cdot 24 = 3 \cdot (x+3)$

$96 = 3x + 9$

$87 = 3x$

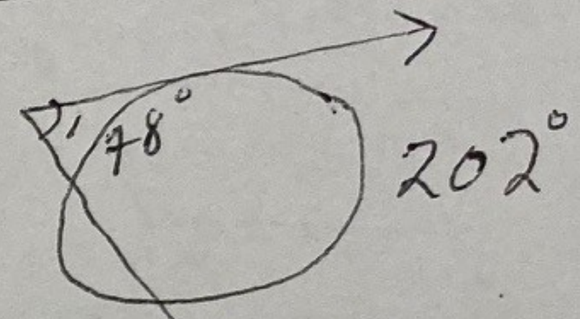
$29 = x$

ANGLE INSIDE



$m\angle 1 = \frac{1}{2}(44° + 86°) = 65°$

ANGLE OUTSIDE



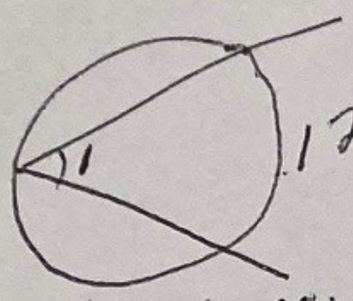
$\angle 1 = \frac{1}{2}(202° - 78°) = 62°$

$C = 2 \cdot \pi \cdot r$

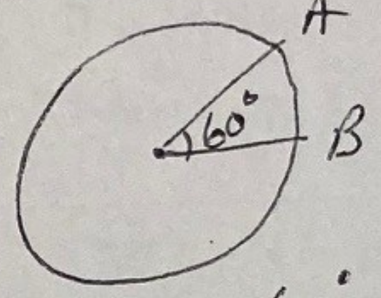
$A = \pi \cdot r^2$

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

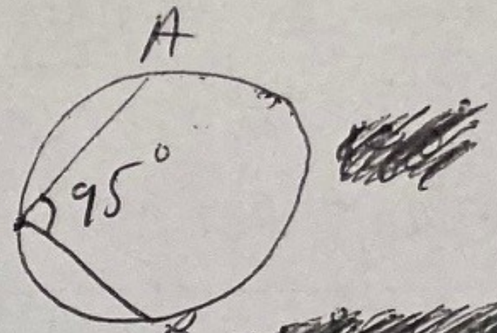
Circles



$\angle 1 = 60°$ (half)



$\overset{\frown}{AB} = 60°$



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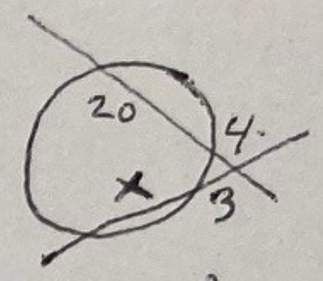

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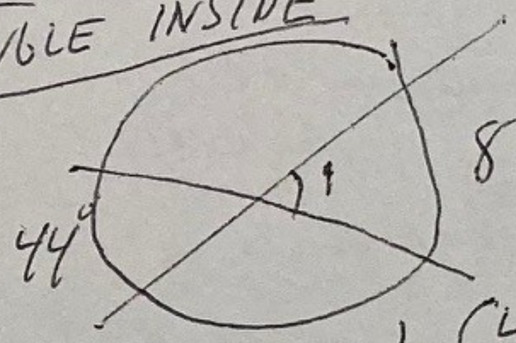

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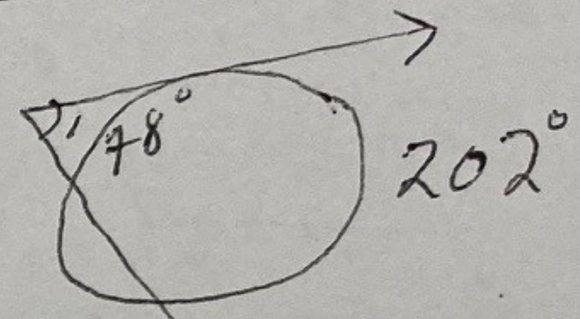
ANGLE OUTSIDE



$\angle 1 = \frac{1}{2}(202° - 78°) = 62°$

$C = 2 \cdot \pi \cdot r$

$A = \pi \cdot r^2$

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

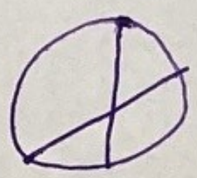
TEST FORMULAS

Angle outside = 0.5 (Big arc - Small arc)

Angle inside = 0.5 (Big arc + small arc)

Two secants = whole • outside

= multiply numbers along each line



Circle's equation = $(x-h)^2 + (y-k)^2 = r^2$

Circumference of a circle = $2 \cdot \pi \cdot r$

Area of a circle = $\pi \cdot r^2$