

ACT  
PRACTICE

① Evaluate  $|x+y| + (x+y)^2$   
when  $x = 2$  and  $y = -3$

② Write  $2.3 \times 10^{-8}$  in standard form.

③  $g(x) = (-3)^x + 3$ ,  $g(2) = ?$

④ The sum of  $x$  and  $y$  is 21. Their difference is 15. What is  $xy$ ?

①  $|(\underline{2}) + (\underline{-3})| + [(\underline{2}) + (\underline{-3})]^2$   
 $| -1 | + (-1)^2$   
 $1 + 1 = \boxed{2}$

②  $.000000023$   
Seven zeros

③  $g(x) = (-3)^x + 3$   
 $g(2) = (-3)^{\underline{(2)}} + 3$   
 $= 9 + 3 = \boxed{12}$

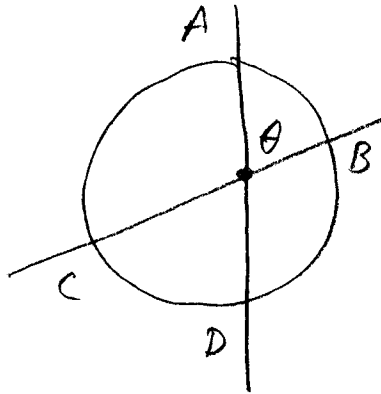
④  $x + y = 21$   
 $x - y = 15$   

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 $2x = 36$   
 $x = 18 \therefore y = 3 \therefore xy = \boxed{54}$

The last piece of the Angles/Circles Relationship (AT least for now).

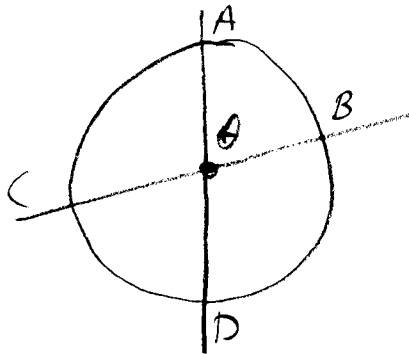
Recall:



INSIDE circle

Intersection of Secants

$$m\angle\theta = \frac{1}{2}(\widehat{AB} + \widehat{CD})$$



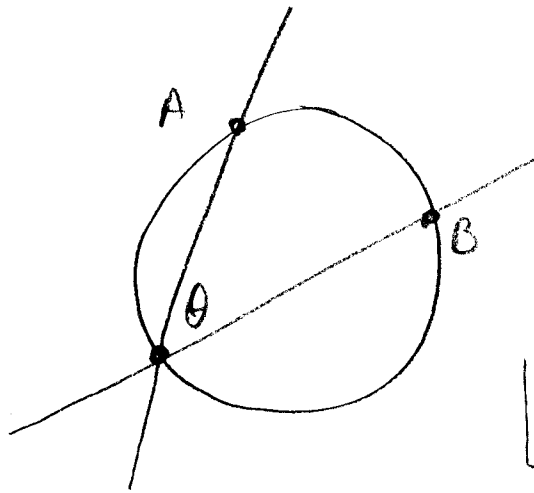
Central Angle

$$m\angle\theta = \frac{1}{2}(\widehat{AB} + \widehat{CD})$$

But since  $\widehat{AC} \cong \widehat{BD}$

$$m\angle\theta = \frac{1}{2}(2\widehat{AB})$$

$$\therefore m\angle\theta = \widehat{AB}$$

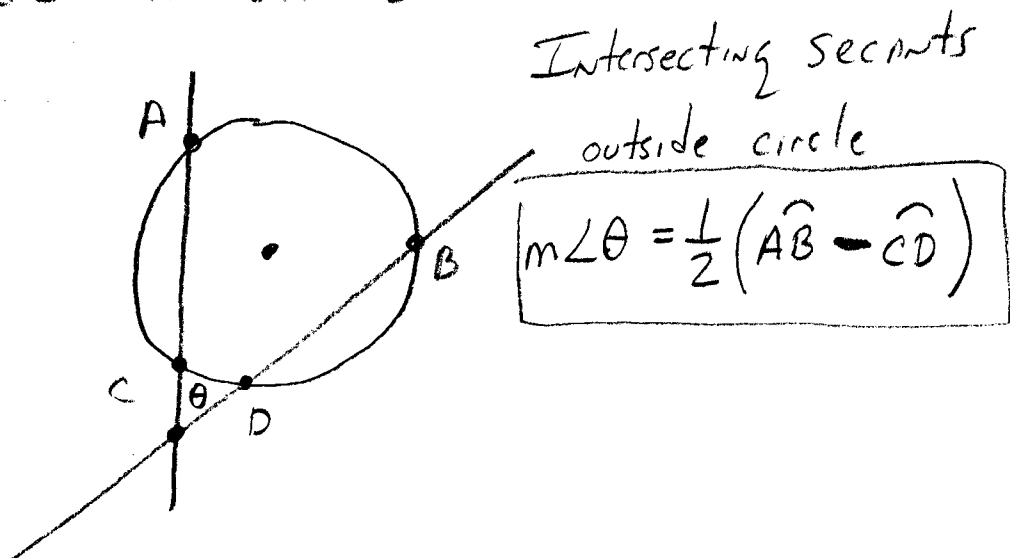


Inscribed Angle

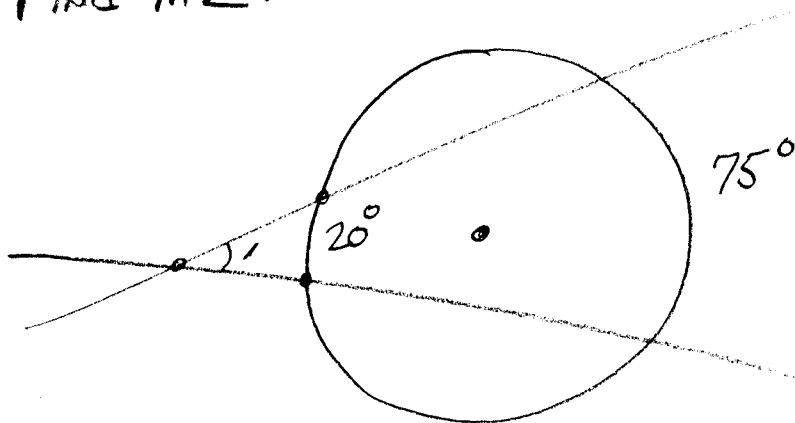
$$m\angle\theta = \frac{1}{2}(\widehat{AB} + 0)$$

$$m\angle\theta = \frac{1}{2}\widehat{AB}$$

WHAT About 2 secants that intersect outside a circle?



(EX) Find  $m\angle 1$



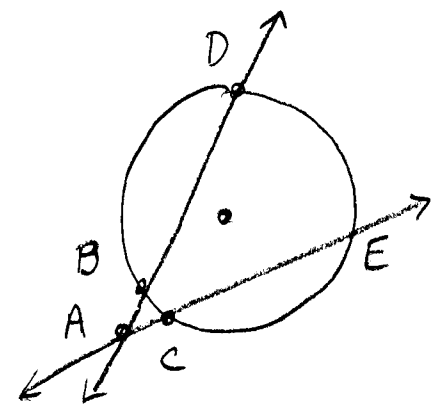
$$m\angle 1 = \frac{1}{2}(75 - 20)$$

$$m\angle 1 = \frac{1}{2}(55) = \frac{55}{2} = 27.5^\circ$$

THIS ALSO works for secant-tangent or 2 tangents  $\Rightarrow$

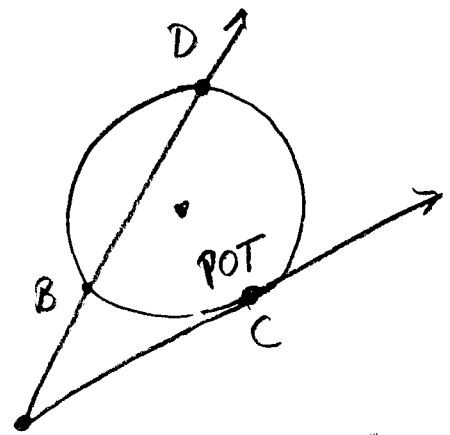
Theorem 10.14 (Pg 563) (Ch. 10-6)

If 2 secants, a secant-tangent, or 2 tangents intersect in the exterior of a circle, then the measure of the angle formed is  $\frac{1}{2}$  the difference of the 2 intercepted arcs.



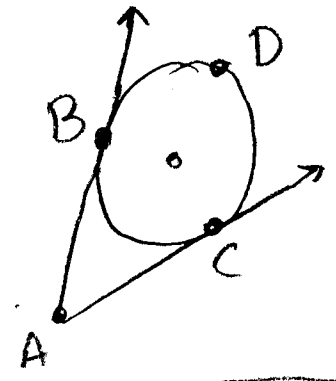
$$m\angle A = \frac{1}{2} (\widehat{DE} - \widehat{BC})$$

2 secants



$$m\angle A = \frac{1}{2} (\widehat{DC} - \widehat{BC})$$

Secant-tangent

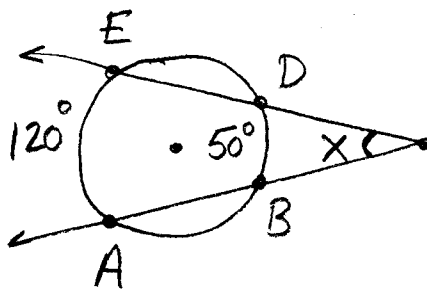


$$m\angle A = \frac{1}{2} (\widehat{BDC} - \widehat{BC})$$

2 tangents

EX3  
Pg 563

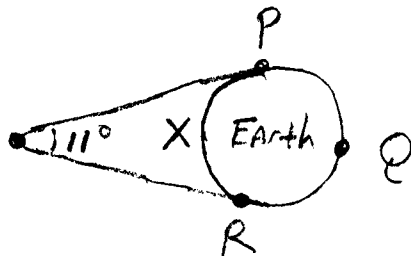
Find  $x$



$$m\angle x = \frac{1}{2} (120 - 50) = \frac{1}{2} (70) = 35^\circ$$

EX4

Geostationary satellite. Altitude  $\approx 35,000$  km over equator. Find  $m\widehat{PR} = x$



$$11 = \frac{1}{2} (m\widehat{PQR} - x)$$

$$\text{BUT } m\widehat{PQR} = 360 - x$$

$$11 = \frac{1}{2} [(360 - x) - x]$$

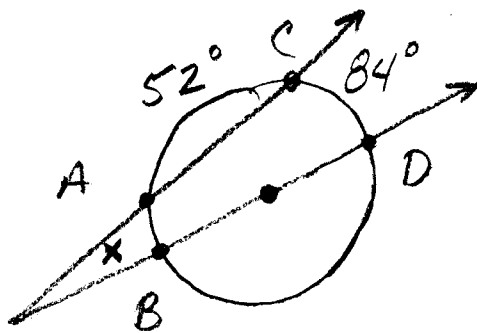
$$11 = \frac{1}{2} [360 - x - x]$$

$$11 = \frac{1}{2} [360 - 2x]$$

$$11 = 180 - x \quad \therefore x = 180 - 11$$

$$\boxed{x = 169^\circ}$$

⊗ Find X



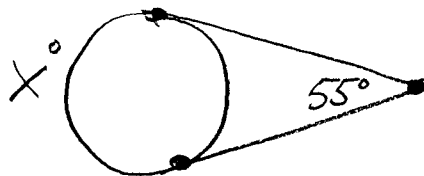
$$m\widehat{DB} = 180^\circ \quad \therefore m\widehat{AB} = 360 - [180 + 84 + 52]$$

$$m\widehat{AB} = 360 - 316$$

$$m\widehat{AB} = 44^\circ$$

$$\therefore X = \frac{1}{2}(84 - 44) = \frac{1}{2}(40) = \boxed{20^\circ = X}$$

⊗ Find X



$$55 = \frac{1}{2}[X - (360 - X)]$$

$$55 = \frac{1}{2}[X - 360 + X]$$

$$55 = \frac{1}{2}[2X - 360] = X - 180$$

+180

+180

$$\boxed{235^\circ = X}$$

Homework: Pg 565 # 21, 23, 25 to 27

Pg 579 # 39