BE-Geometry 1 | Wednesday 2-16-11

ACT practice

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

② Write 2.3×10^{-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?

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① $|(2) + (-3)| + [(2) + (-3)]^2$

$|-1| + (-1)^2$

$1 + 1 = \boxed{2}$

② .000000023

seven zeros

③ $g(x) = (-3)^x + 3$

$g(2) = (-3)^{(2)} + 3$

$= 9 + 3 = \boxed{12}$

④ $x + y = 21$

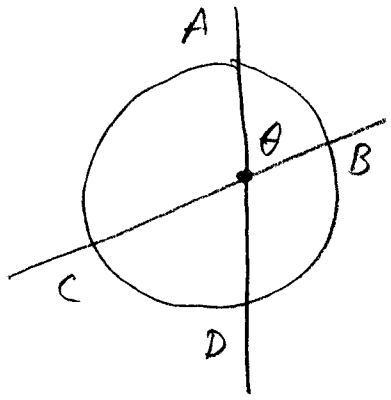
$x - y = 15$

$2x = 36$

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

The last piece of the Angles/Circles relationship (at least for now).

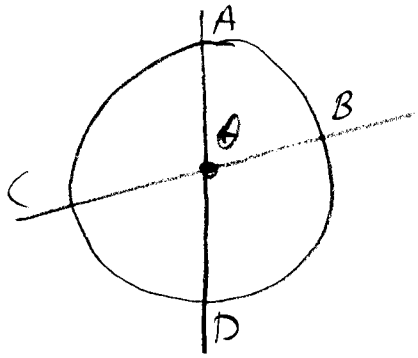
Recall:



INSIDE Circle

Intersection of Secants

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



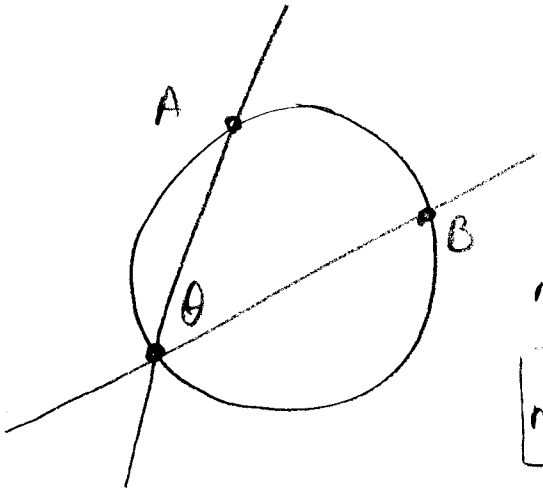
Central Angle

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

But since $\overset{\frown}{AC} \cong \overset{\frown}{CD}$

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

$$\therefore \boxed{m\angle\theta = \overset{\frown}{AB}}$$



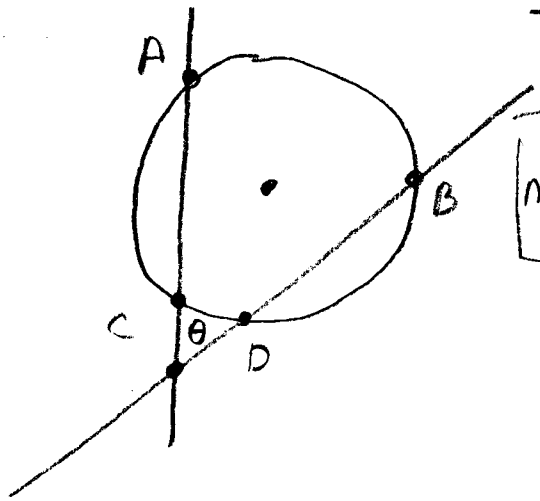
Inscribed Angle

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

$$\boxed{m\angle\theta = \frac{1}{2}\overset{\frown}{AB}}$$

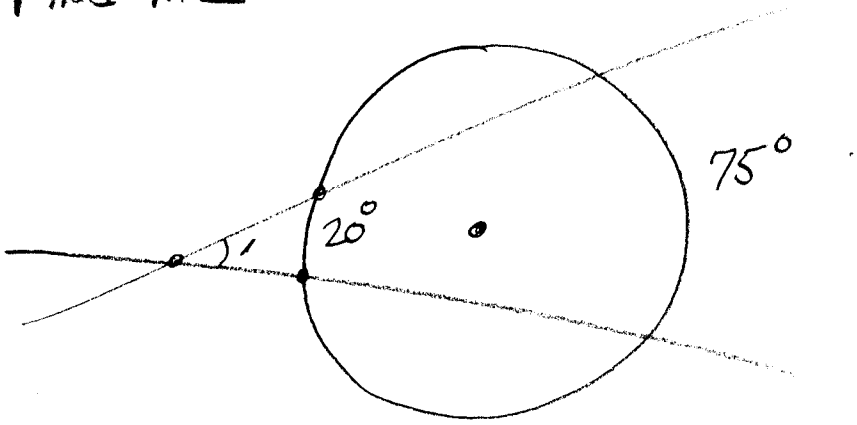
What about 2 secants that intersect outside a circle?

Intersecting secants outside circle



$$m\angle\theta = \frac{1}{2}\left(\overset{\frown}{AB} - \overset{\frown}{CD}\right)$$

(EX) Find $m\angle 1$



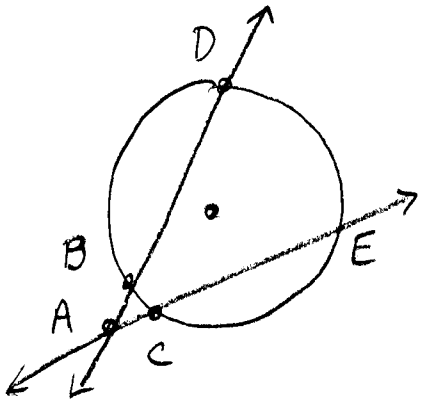
$$m\angle 1 = \frac{1}{2}(75-20)$$

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

THIS ALSO WORKS for secant-tangent or 2 tangents ⇒

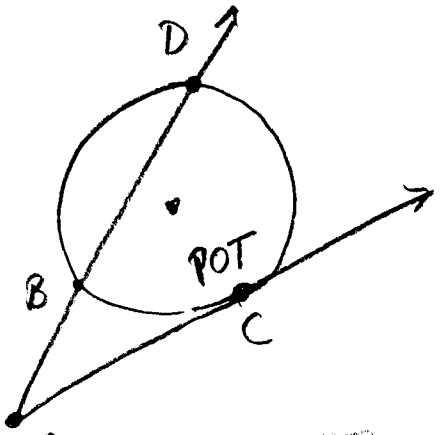
Theorem 10.14 (Pg 563)(Ch. 10-6)

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.



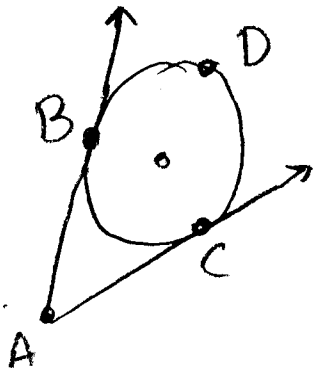
$m\angle A = \frac{1}{2}(\overset{\frown}{DE} - \overset{\frown}{BC})$

2 secants



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

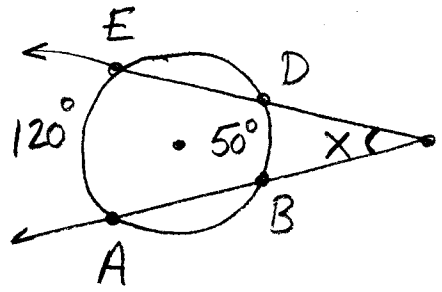
Secant-tangent



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

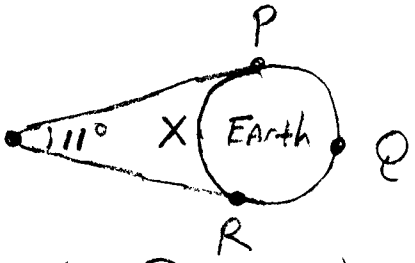
2 tangents

Ex 3 Pg 563 Find x



$m\angle X = \frac{1}{2}(120-50) = \frac{1}{2}(70) = 35°$

Ex 4 Geostationary satellite. Altitude $\cong$ 35,000 km over Equator. Find $m\overset{\frown}{PR} = X$



$11 = \frac{1}{2}(m\overset{\frown}{PQR} - X)$ But $m\overset{\frown}{PQR} = 360 - X$

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

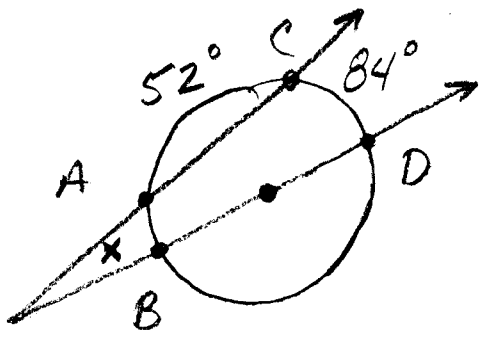
$11 = \frac{1}{2}[360-X-X]$

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

$11 = 180 - X$ $\therefore X = 180 - 11$

$\boxed{X = 169°}$

(Ex) Find X



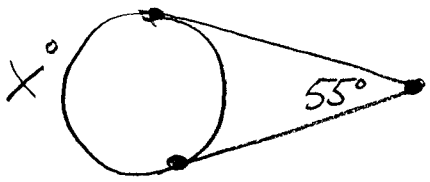
$m\overset{\frown}{DB} = 180°$ $\therefore m\overset{\frown}{AB} = 360 - [180+84+52]$

$m\overset{\frown}{AB} = 360 - 316$

$m\overset{\frown}{AB} = 44°$

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

(Ex) Find X



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

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

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

$+180$ $+180$

$\boxed{235° = X}$

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

Pg 579 # 39