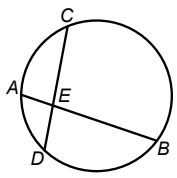
Segments & Circles
(part 2)

title

Segments of Chords Theorem

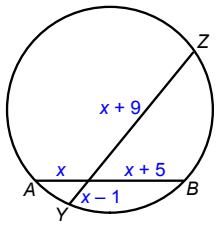
two chords intersecting in the interior of a circle:

product of segments of one chord = product of segments of other chord



segments of chords thm

Find *AB* and *YZ*.



$x(x+5) = (x-1)(x+9)$

$x^2+5x = x^2+9x-1x-9$

$x^2+5x = x^2+8x-9$

$5x = 8x-9$

$-3x = -9$

$x = 3$

$AB = 3+3+5$
$= 11$

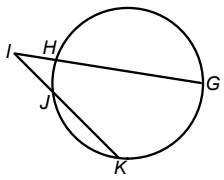
$YZ = 3-1+3+9$
$= 14$

example

Segments of Secants Theorem

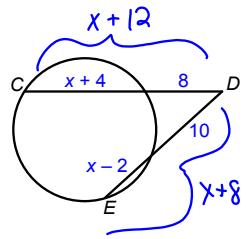
two secant segments with a common endpoint outside the circle:

external • whole secant segment = external • whole secant segment



secant segments thm

Find *CD* and *DE*.



$8(x+12) = 10(x+8)$

$8x+96 = 10x+80$

$16 = 2x$

$8 = x$

$CD = 8+4+8 = 20$

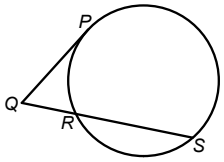
$DE = 8-2+10 = 16$

example

Segments of Secants and Tangents Theorem

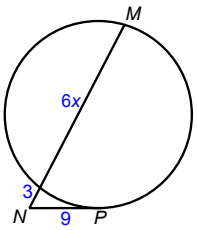
a secant segment and a tangent segment with a common endpoint outside the circle:

external • whole secant segment = tangent segment^2



secant-tangent segments thm

Find *MN*.



$3(6x+3) = 9^2$

$18x+9 = 81$

$18x = 72$

$x = 4$

$MN = 6(4)+3$

$= 27$

example

Feb 10-4:13 PM