

Interior and Exterior Angles

Find the measure of the arc or angle indicated. Assume that lines which appear tangent are tangent.

1) *inscribed*

70°

140°

2) *outside*

$x = \frac{1}{2}(135 - 55)$

$x = 40^\circ$

3) *outside*

$x = \frac{1}{2}(196 - 96)$

$x = 50^\circ$

4) *inscribed*

$x = 35^\circ$

5) *inscribed*

$x = 51^\circ$

6) *inscribed*

$x = 68^\circ$

7) *inscribed*

$x = 70^\circ$

8) *inscribed*

$x = 68^\circ$

9) Find $m\angle CBD$

inside

$8x + 2 = \frac{1}{2}(90 + -9 + 9x)$

$-9 + 9x \quad 16x + 4 = 81 + 9x$

$7x = 77$

$x = 11$

$8(11) + 2 = 90^\circ$

10) Find $m\angle BAC$

inside

$7 + 25x = \frac{1}{2}(109 + 27x - 3)$

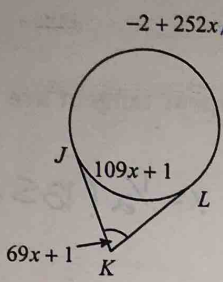
$14 + 50x = 106 + 27x$

$23x = 92$

$x = 4$

$7 + 25(4) = 107^\circ$

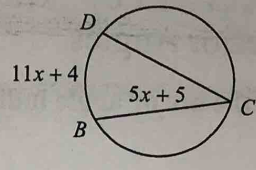
outside $69x+1 = \frac{1}{2}(-2+252x - (109x+1))$
 11) Find $m\angle JKL$ $138x+2 = -2+252x-109x-1$



$138x+2 = -2+252x-109x-1$
 $138x+2 = 143x-3$
 $5 = 5x$
 $1 = x$

$69(1)+1$
 70°

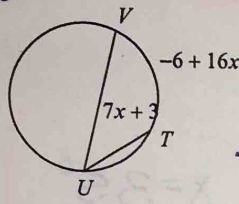
inscribed $5x+5 = \frac{1}{2}(11x+4)$



$10x+10 = 11x+4$
 $6 = x$

$11(6)+4$
 70°

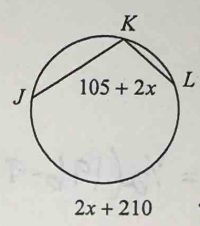
13) Find $m\angle TUV$
 inscribed



$7x+3 = \frac{1}{2}(-6+16x)$
 $7x+3 = -3+8x$
 $6 = x$

$7(6)+3$
 45°

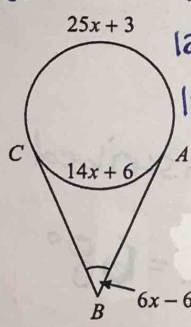
14) Find $m\widehat{JKL}$
 inscribed



$105+2x = \frac{1}{2}(2x+210)$
 $105+2x = x+105$
 $x = 0$

$\widehat{JL} = 2(0)+210 = 210$
 $\widehat{JKL} = 360-210 = 150^\circ$

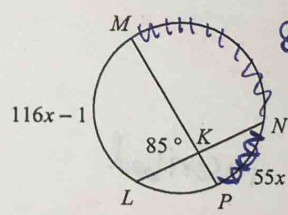
15) Find $m\widehat{AC}$
 outside $6x-6 = \frac{1}{2}(25x+3 - (14x+6))$



$12x-12 = 25x+3-14x-6$
 $12x-12 = 11x-3$
 $x = 9$

$14(9)+6$
 132°

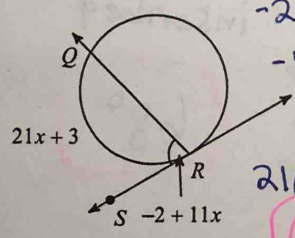
16) Find $m\widehat{NP}$
 inside



$85 = \frac{1}{2}(116x-1+55x)$
 $170 = 171x-1$
 $171 = 171x$
 $1 = x$

$55(1)$
 55°

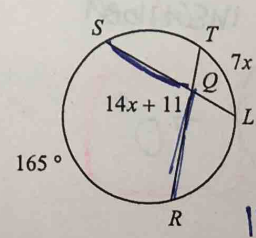
17) Find $m\widehat{QR}$
 inscribed $-2+11x = \frac{1}{2}(21x+3)$



$-4+22x = 21x+3$
 $x = 7$

$21(7)+3$
 150°

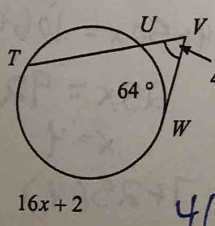
18) Find $m\angle ROS$
 inside $14x+11 = \frac{1}{2}(7x+4+165)$



$28x+22 = 7x+169$
 $21x = 147$
 $x = 7$

$14(7)+11$
 109°

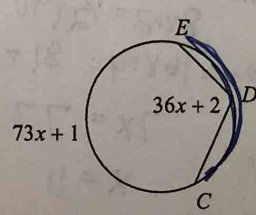
19) Find $m\angle WVT$
 outside $4x+17 = \frac{1}{2}(16x+2-64)$



$8x+34 = 16x-62$
 $96 = 8x$
 $12 = x$

$4(12)+17$
 65°

20) Find $m\widehat{EDC}$
 inscribed $36x+2 = \frac{1}{2}(73x+1)$



$72x+4 = 73x+1$
 $3 = x$

$\widehat{EC} = 73(3)+1 = 220$
 $\widehat{EDC} = 360-220$

140°