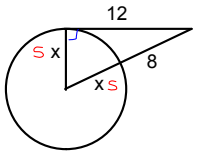
Bellwork

1.



$x^2 + 12^2 = (x+8)^2$

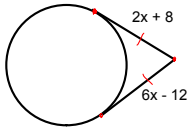
$\cancel{x^2} + 144 = \cancel{x^2} + 16x + 64$

$-\cancel{x^2} \quad -64 \quad -\cancel{x^2} \quad -64$

$\frac{80}{16} = \frac{16x}{16}$

$x = 5$

2.



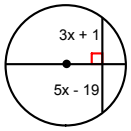
$2x + 8 = 6x - 12$

$-2x \quad 12 \quad -2x \quad +12$

$20 = 4x$

$x = 5$

3.

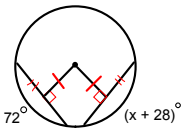


$3x + 1 = 5x - 19$

$20 = 2x$

$x = 10$

4.

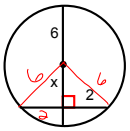


$72 = x + 28$

$-28 \quad -28$

$44 = x$

5.



$2^2 + x^2 = 6^2$

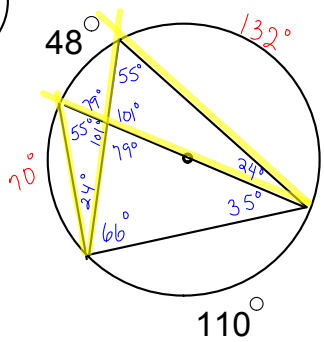
$4 + x^2 = 36$

$x^2 = 32$

$x = \sqrt{32}$ $16 \cdot 2$

$x = 4\sqrt{2}$

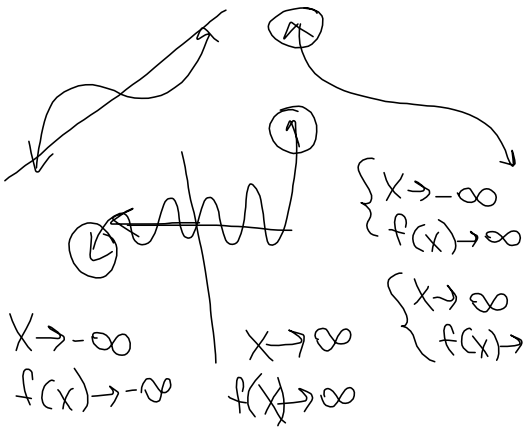
6. Find all missing angles and arcs.



End Behavior

odd degree

x, x^3, x^5, x^7



$x \to -\infty$, $f(x) \to -\infty$

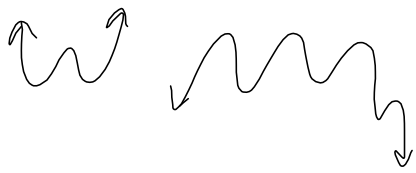
$x \to \infty$, $f(x) \to \infty$

$\begin{cases} x \to -\infty \\ f(x) \to \infty \end{cases}$

$\begin{cases} x \to \infty \\ f(x) \to -\infty \end{cases}$

even degree

x^2, x^4, x^6, x^8



39)

$\underbrace{(3,0)\ (-3,0)\ (4,0)}_{\text{x-int}}\ \underbrace{(0,36)}_{\text{y-int}}$

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

$f(x)=(x^2-9)(x-4)$

$f(x)=x^3-4x^2-9x+36$

$$
\begin{array}{r}
5x^2+17x+31 \\
x^2-3x+4\,\overline{)\,5x^4+2x^3+0x^2-9x+12} \\
-5x^4+15x^3-20x^2 \\
\hline
17x^3-20x^2-9x \\
-17x^3+51x^2-68x \\
\hline
31x^2-77x+12 \\
-31x^2+93x-124 \\
\hline
16x-112
\end{array}
\quad + \frac{6x-112}{x^2-3x+4}
$$

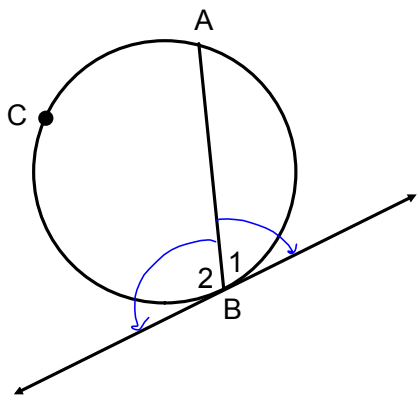
$x-3$ $\quad$ $x-3=0$
$x=3$

3	2	-11	15	6	-18
	↓	6	-15	0	18
	2	-5	0	6	0

remainder

$f(x) = 2x^3 - 5x^2 + 6$

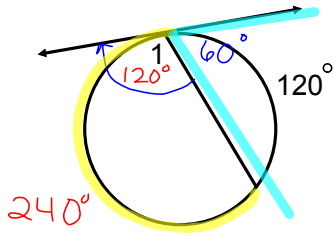
* If a tangent and a chord intersect at a point on a circle, then the measure of each angle formed is one half the measure of its intercepted arc.



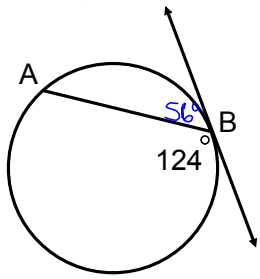
$m\angle 1 = \frac{1}{2} m\overset{\frown}{AB}$

$m\angle 2 = \frac{1}{2} m\overset{\frown}{ACB}$

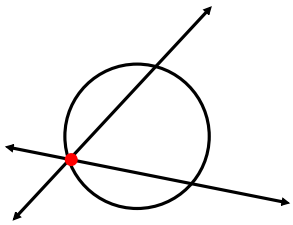
Find $m\angle 1$.



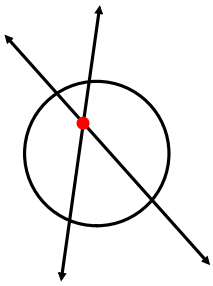
Find $m\overset{\frown}{AB}$ = 112°



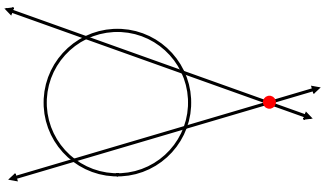
If two lines intersect a circle, there are three places where the lines can intersect.



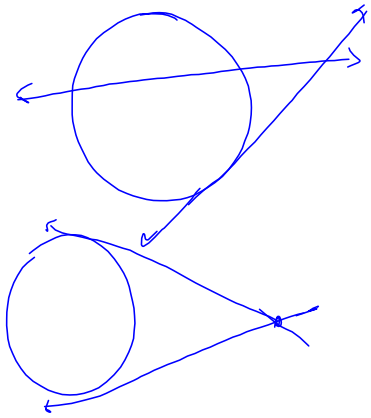
on the circle



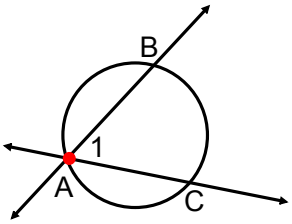
inside the circle



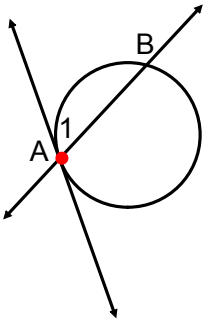
outside the circle



*If two lines intersect *on* the circle, then the measure of the angle formed is half its intercepted arc.

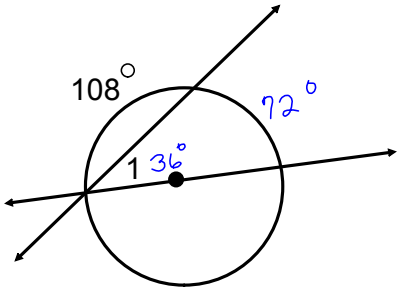


$m\angle 1 = \frac{1}{2} m\overset{\frown}{BC}$



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

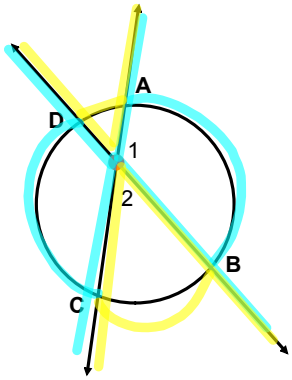
Find $m\angle 1$



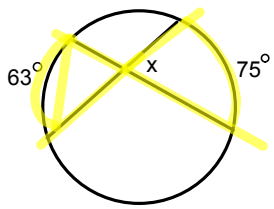
*If two chords intersect ***inside*** a circle, then the measure of each angle is one half the ***sum*** of the measures of the arcs, intercepted by the angle and its vertical angle.

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

$$m\angle 2 = \frac{1}{2}(m\overset{\frown}{BD} + m\overset{\frown}{CB})$$

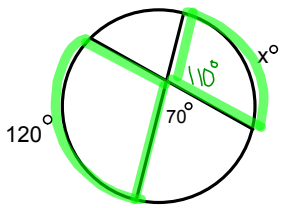


Find the value of x.



$m\angle x = \frac{1}{2}(63+75)$

$m\angle x = 69°$

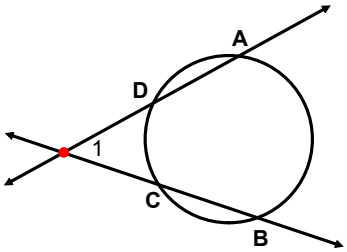


$110° = \frac{1}{2}(x + 120°)$

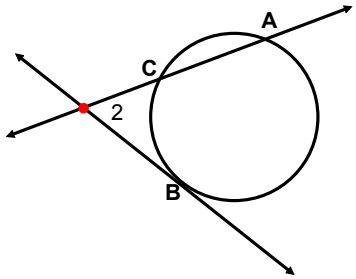
$220° = x + 120°$

$x = 100°$

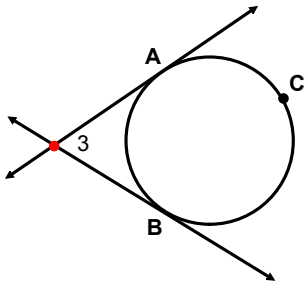
* If two lines intersect ***outside*** a circle, then the measure of the angle formed is one half the ***difference*** of the measures of the intercepted arcs.



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

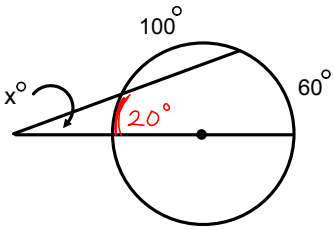


$m\angle 2 = \frac{1}{2}(m\overset{\frown}{AB} - m\overset{\frown}{BC})$



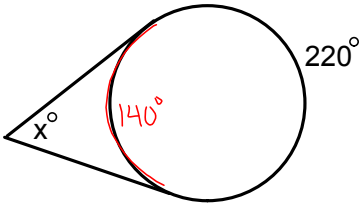
$m\angle 3 = \frac{1}{2}(m\overset{\frown}{ACB} - m\overset{\frown}{AB})$

Find the value of x.



$\angle x = \frac{1}{2}(60-20)$

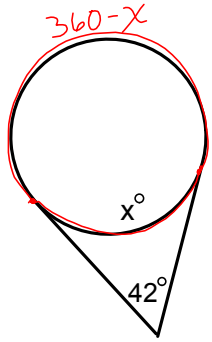
$\angle x = 20°$



$\angle x = \frac{1}{2}(220° - 140°)$

$\angle x = \frac{1}{2}(80°)$

$\angle x = 40°$



$\frac{1}{2}(360 - x - x) = 42$

$360 - 2x = 84$

$x = 138°$