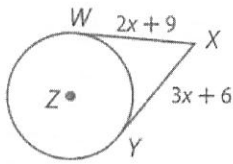


OPTIONAL Practice Test

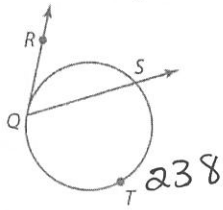
1. Find the value of x . Assume that segments that appear to be tangent are tangent.



$$2x+9 = 3x+6$$

$$\boxed{3 = x}$$

2. Find $m\angle RQS$ if $m\widehat{QTS} = 238^\circ$



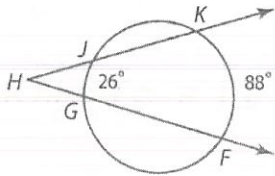
$$m\widehat{RS} = 360 - 238$$

$$= 122^\circ$$

$$m\angle RQS = \frac{1}{2}(122)$$

$$= \boxed{61^\circ}$$

3. Find $m\angle H$

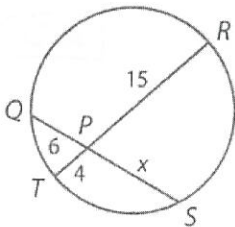


$$m\angle H = \frac{1}{2}(88 - 26)$$

$$= \frac{1}{2}(62)$$

$$= \boxed{31^\circ}$$

4. Find the value of x .

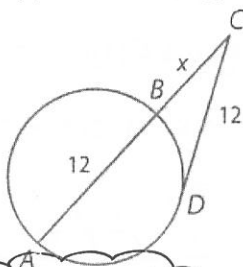


$$6x = (15)(4)$$

$$6x = 60$$

$$\boxed{x = 10}$$

5. Find the value of x . Assume that segments that appear to be tangent are tangent.



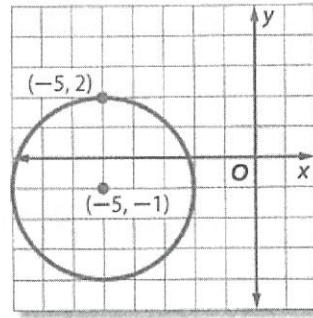
$$(x+12)(x) = 12^2$$

$$x^2 + 12x = 144$$

$$x^2 + 12x - 144 = 0$$

$$x = \frac{-12 \pm \sqrt{12^2 - 4(1)(-144)}}{2(1)}$$

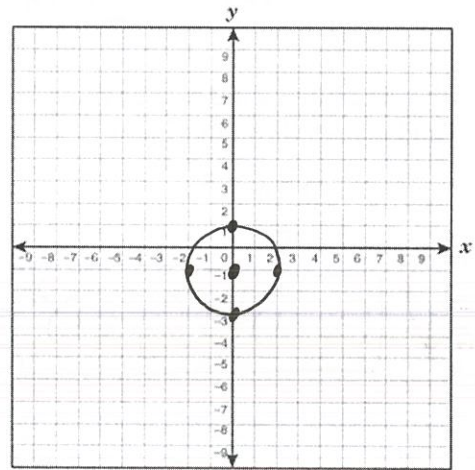
6. Write the equation for the circle.



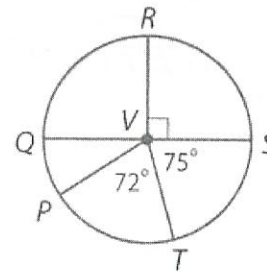
center $(-5, -1)$
 $r = 3$

$$\boxed{(x+5)^2 + (y+1)^2 = 9}$$

7. Graph the following: $x^2 + (y+1)^2 = 4$

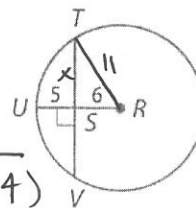


8. Find the following:



- a. $m\widehat{SP} = 147^\circ$
b. $m\widehat{QRT} = 255^\circ$
c. $m\widehat{PR} = 123^\circ$

9. Find TV. Give answer in exact form only.



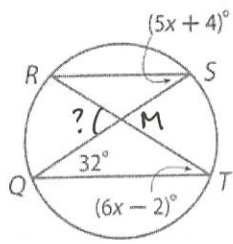
$$x^2 + 6^2 = 11^2$$

$$x = \sqrt{85}$$

$$\boxed{TV = 2\sqrt{85}}$$

See last page...

10. Let M be the intersection of chords \overline{SQ} and \overline{RT} . Find $m\angle RMQ$.



$$5x + 4 = 6x - 2$$

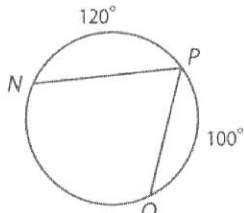
$$6 = x$$

$$m\angle T = 34$$

$$m\angle QMT = 180 - (32 + 34) = 114$$

$$m\angle RMQ = 180 - 114 = \boxed{66^\circ}$$

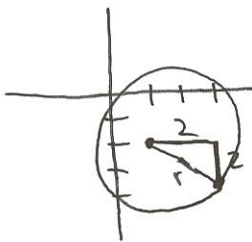
11. Find $m\angle P$



$$m\widehat{NQ} = 360 - (120 + 100) = 140$$

$$m\angle P = \frac{1}{2}(140) = \boxed{70^\circ}$$

12. Write the equation of the circle whose center is (1, -2) and passes through (3, -4)

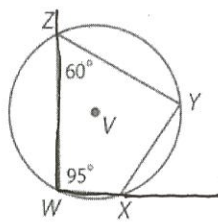


$$r = 2^2 + 2^2$$

$$r^2 = 8$$

$$\boxed{(x-1)^2 + (y+2)^2 = 8}$$

13. Find $m\widehat{ZWX}$



$$m\widehat{ZYX} = 2(95) = 190$$

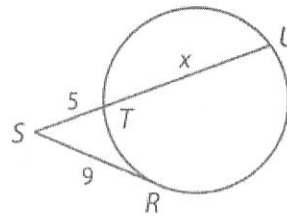
$$m\widehat{ZWX} = 360 - 190 = \boxed{170^\circ}$$

14. Write the equation of the circle whose center is (1, -8) and has a radius of 7.

$$\boxed{(x-1)^2 + (y+8)^2 = 49}$$

both intercept \overline{RQ}

15. Find the value of x. Assume that segments that appear to be tangent are tangent.



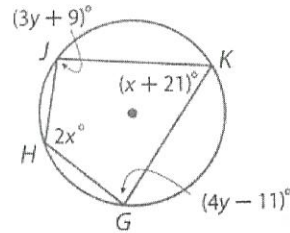
$$(5+x)(5) = 9^2$$

$$25 + 5x = 81$$

$$5x = 56$$

$$\boxed{x = 11.2}$$

16. Use the diagram to find the following:



a. $m\angle H = 106^\circ$

b. $m\angle G = 93^\circ$

$$2x + x + 21 = 180$$

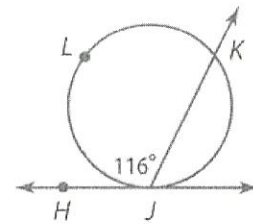
$$3x = 159$$

$$x = 53$$

$$m\angle H = 2(53) = \boxed{106^\circ}$$

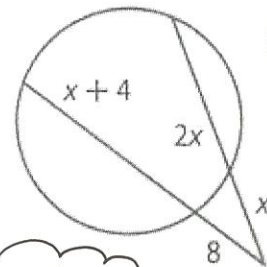
*see last page

17. Find $m\widehat{LK}$



$$2(116) = \boxed{232^\circ}$$

18. Find the value of x.



$$(x+12)(8) = (3x)(x)$$

$$8x + 96 = 3x^2$$

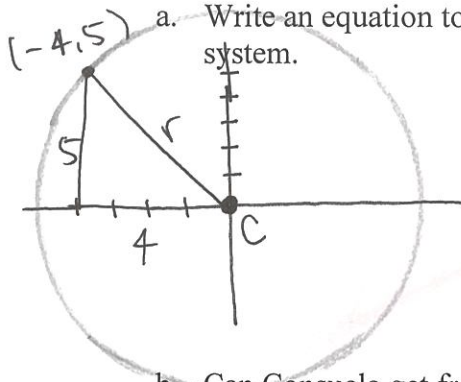
$$3x^2 - 8x - 96 = 0$$

$$x = \frac{-(-8) \pm \sqrt{(-8)^2 - 4(3)(-96)}}{2(3)}$$

*see last pg

19. Pizza and Subs offers free delivery within 6 miles of the restaurant. The restaurant is located 4 miles west and 5 miles north of Consuela's house.

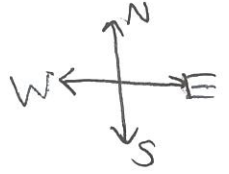
a. Write an equation to represent this situation if Consuela's house is at the origin of the coordinate system.



$$r^2 = 4^2 + 5^2$$

$$r^2 = 41$$

$$x^2 + y^2 = 41$$



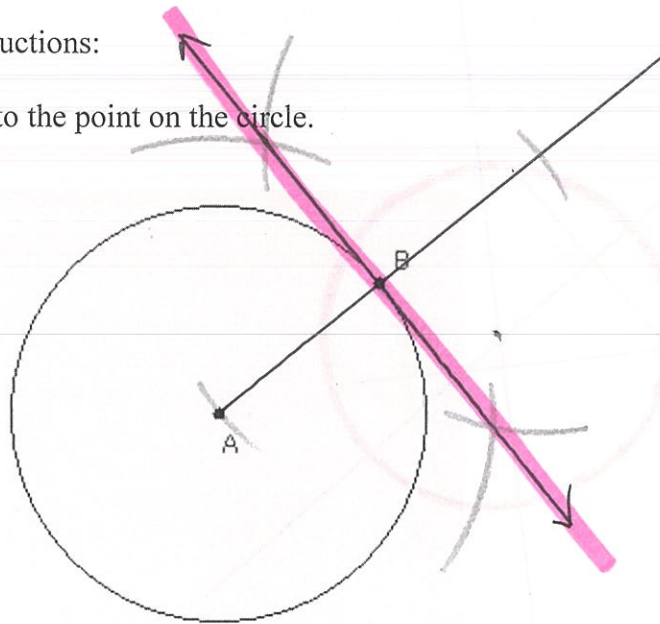
b. Can Consuela get free delivery of the orders pizza from Pizza and Subs? Explain.

$$\sqrt{41} \approx 6.4 > 6$$

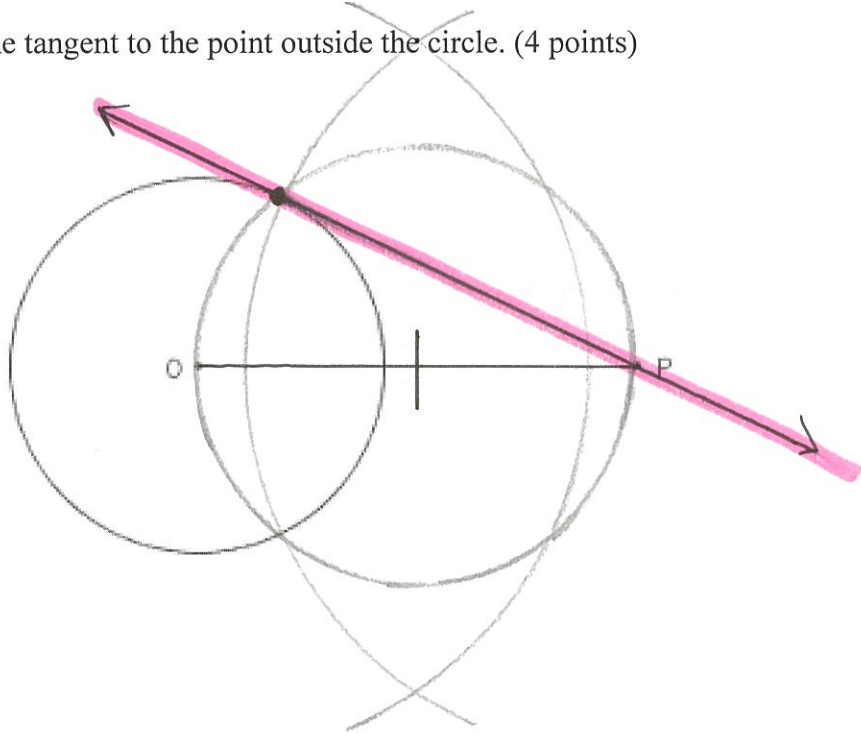
NO, she cannot because her house is more than 4 miles away from Pizza and Subs.

20. Complete the following constructions:

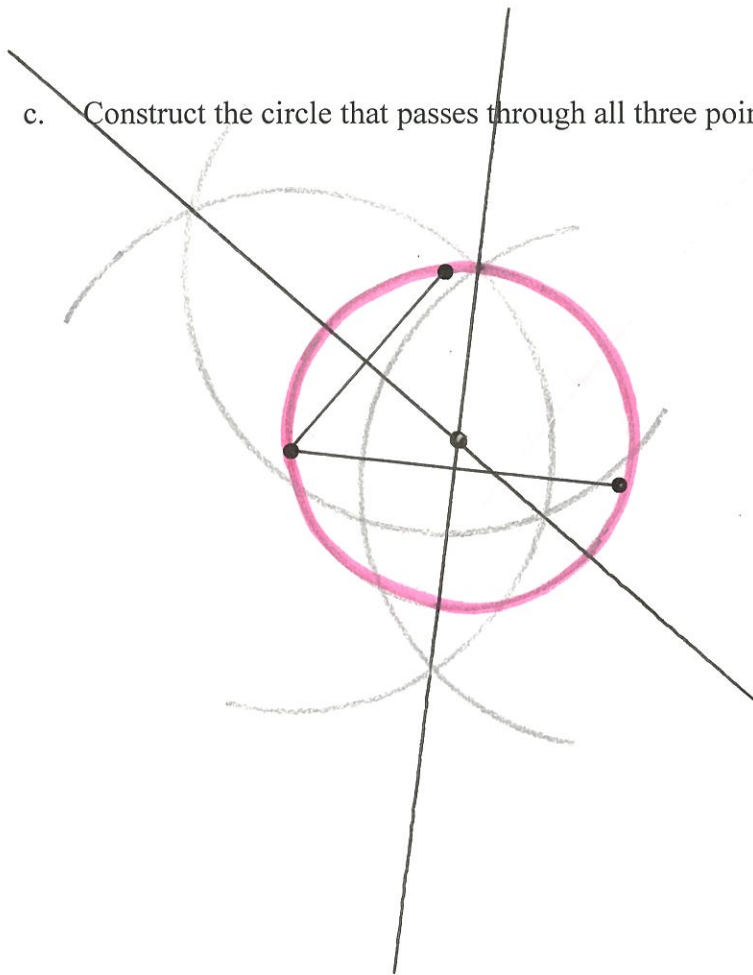
a. Construct the line tangent to the point on the circle.



b. Construct the line tangent to the point outside the circle. (4 points)



c. Construct the circle that passes through all three points given. (3 points)



$$\begin{aligned}
 \textcircled{5} \quad x &= \frac{-12 \pm \sqrt{144 + 576}}{2} \\
 &= \frac{-12 \pm \sqrt{720}}{2} \\
 &= \frac{-12 \pm 12\sqrt{5}}{2} \\
 &= \frac{\cancel{2}(-6 \pm 6\sqrt{5})}{\cancel{2}} \\
 &= -6 \pm 6\sqrt{5} \\
 &= \boxed{-6 + 6\sqrt{5} \approx 7.42}
 \end{aligned}$$

$$\begin{aligned}
 \star \sqrt{720} &= \sqrt{36 \cdot 20} \\
 &= \sqrt{36 \cdot 4 \cdot 5} \\
 &= 6 \cdot 2 \cdot \sqrt{5} \\
 &= 12\sqrt{5}
 \end{aligned}$$

$$\begin{aligned}
 \textcircled{16} \quad 3y + 9 + 4y - 11 &= 180 \\
 7y &= 182 \\
 y &= 26
 \end{aligned}$$

$$m\angle G = 4(26) - 11 = \boxed{93^\circ}$$

$$\begin{aligned}
 \textcircled{18} \quad x &= \frac{8 \pm \sqrt{64 + 1152}}{6} \\
 &= \frac{8 \pm \sqrt{1216}}{6} \\
 &= \frac{8 \pm 8\sqrt{19}}{6} \\
 &= \frac{\cancel{2}(4 \pm 4\sqrt{19})}{\cancel{2} \cdot 3}
 \end{aligned}$$

$$\begin{aligned}
 \star \sqrt{1216} &= \sqrt{4 \cdot 304} \\
 &= \sqrt{4 \cdot 4 \cdot 76} \\
 &= \sqrt{4 \cdot 4 \cdot 4 \cdot 19} \\
 &= 2 \cdot 2 \cdot 2 \sqrt{19} \\
 &= 8\sqrt{19}
 \end{aligned}$$



$$= \frac{4 \pm 4\sqrt{19}}{3}$$

$$= \frac{4 + 4\sqrt{19}}{3} \approx 7.15$$