Advanced Algebra

Unit 9 Assignment #11

The Law of Cosines

**a²=b²+c²-2bcCosA**

Set up the Triangles and find the length of the remaining side **(These problems are basic use of the Law of Cosines)**

1) In Triangle ABC, Angle A is 105°, c=15cm, b=21cm
2) In Triangle PRQ, Angle R is 32°, p=4.8km, and q=6.3km
3) In Triangle KLM, Angle L is 72°, m=6.2meters, and k=14.8meters

For the following problems, use the law of cosines to find the measure of all the angles of the triangle. **You will need to do the law of cosines twice. Then you may subtract from 180°**

4) In Triangle ABC   $\overline{AC}$=12cm; $\overline{CB}$=11cm; and $\overline{AB}$=13cm
5) In Triangle PQR  $\overline{PQ}$=5cm; $\overline{PR}$=10cm; and $\overline{QR}$=7cm
6) Find the smallest angle of a triangle with sides 11cm,13cm, and 17cm
7) Find the largest angle of a triangle with sides 4cm, 7cm, and 9 cm

For the following problems, set up the triangles, and find the length of the missing side. These problems involve the quadratic formula.$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$ **This is the hardest case involving the law of Cosines. It requires some work!**

8) In triangle ABC Angle A is 60°, $\overline{AB}$=6cm;$\overline{BC}$=7cm Find the missing side $\overline{AC}$=x
9) In Triangle EGF, angle E is 120°, $\overline{GE}$=3cm, $\overline{GF}$=5cm, find the missing side $\overline{EF}$=x
10) In Triangle ABC, angle A=70°, $\overline{BC}$=11cm, $\overline{AC}$=8cm find $\overline{AB}$
11) In Triangle ABC, angle B= 130°, $\overline{AB}$=5cm, $\overline{AC}$=13cm; find $\overline{BC}$
12) In Triangle QRS, angle S = 40°, $\overline{QR}$=5cm, $\overline{SR}$= 6cm; find $\overline{SQ}$
13) In Triangle MNO, angle M is 60°, $\overline{NO}$ =5cm, $\overline{MN}$=xcm, and $\overline{MO}$=2xcm
14)


**Review problems with the Law of Sines:**

For the following Problems , the Triangle is ABC find:

15) a if A = 63°, B=49° and b= 18cm
16) b is A = 82°, C=25°, and c=34cm

17) c if B = 21°, C=48°, and a=6.4cm