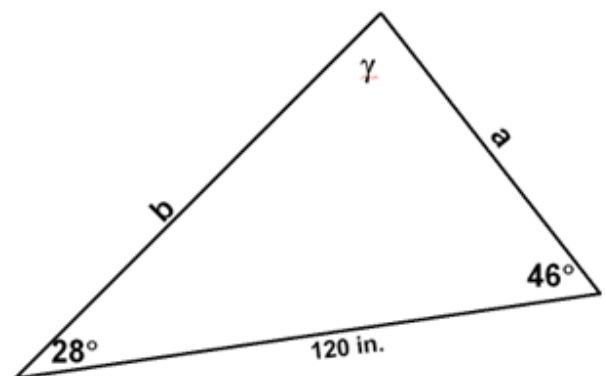


4. Find ALL solutions of the equation $\cos(2\theta) + \sin^2(\theta) = 0$. A calculator should not be used.

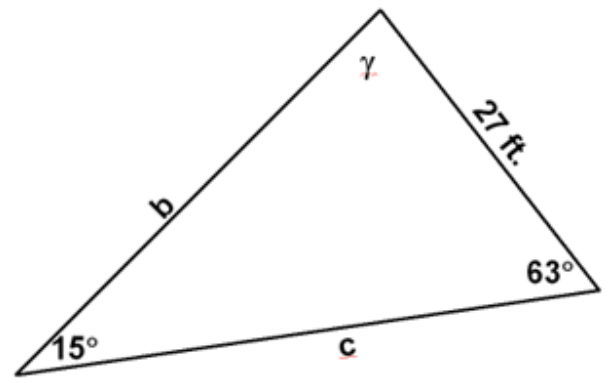
5. Use a calculator to find a solution of $5.0118\sin(x) - 3.1105 = 0$ in Quadrant II. Show the work which tells me what computations you performed with the calculator.

6. Find b in Triangle 1.



Triangle 1

7. Find b in Triangle 2.



Triangle 2

8. Prove $\tan^2(x) - \sin^2(x) = \tan^2(x)\sin^2(x)$

9. Prove $\sin(2x) = (\tan(x))(1 + \cos(2x))$

10. Consider $\frac{(x-2)^2}{12} + \frac{(y+3)^2}{8} = 1$

To analyze this equation it is recommended that it be translated to a new u-v coordinate system. Fill in the blanks and answer the following questions to complete the analysis.

a) let $u = \underline{\hspace{2cm}}$ and $v = \underline{\hspace{2cm}}$

If $u = 0$, then $\underline{\hspace{2cm}}$ and if $v = 0$, then $\underline{\hspace{2cm}}$

This implies the origin of the new translated u-v system has coordinates $\underline{\hspace{2cm}}$ in the original x-y coordinate system.

b) Sketch the new translated u-v coordinate system on the original coordinate system below.

c) Write the equation of the curve in the translated system $\underline{\hspace{4cm}}$

d) If $u = 0$, then $v = \underline{\hspace{2cm}}$ which implies the $\underline{\hspace{1cm}}$ -intercept is $\underline{\hspace{2cm}}$.

If $v = 0$, then $u = \underline{\hspace{2cm}}$ which implies the $\underline{\hspace{1cm}}$ -intercept is $\underline{\hspace{2cm}}$.

e) Sketch the graph (on the translated coordinate system) and label its vertices with coordinates in the translated coordinate system.

