**SLU PreCalculus Quiz 10 Solution Fall 2007**

NAME: _____Score_____/10

Please **print** your name

1. To solve the triangle in Figure 8, we begin by using the Law of Sines to determine $\beta$. Show the necessary work and reasons to find two values of $\beta$. You should conclude that $\beta_1 = 68.79°$ and $\beta_2 = 111.21°$.

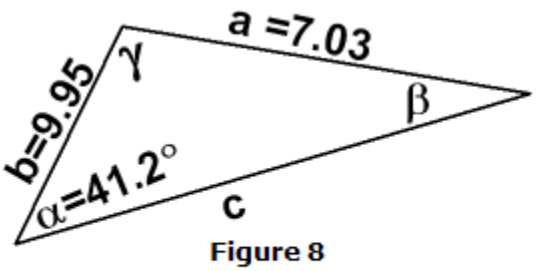


**Figure 8**
**SSA**
**One Angle Given**
**Two Solutions**

$$\sin(\beta_1) = \frac{(9.95)(\sin(41.2))}{7.03} = 0.932$$

$$\beta_1 = \sin^{-1}(0.932) = 68.79$$

$$h = b\sin(\alpha) = (9.95)(\sin(41.2)) = 6.55 < 7.03 = a$$

Therefore there are two triangles and

$$\beta_2 = 180 - 68.79 = 111.3$$

**Triangle I $\beta = 68.79°$**

$\gamma_1 = 180° - 68.79° - 41.2° = 70.01°$

Use the Law of Cosines to calculate c. Show work that leads to c = 10.03

$$c^2 = a^2 + b^2 - 2ab\cos(\gamma)$$

$$c = \sqrt{(7.03)^2 + (9.95)^2 - 2(7.03)(9.95)\cos(70.01)} = 10.03$$

**Triangle II $\beta_2 = 111.21°$**

$\gamma_2 = 180° - 111.21° - 41.2° = 27.59°$

Use the Law of Sines to calculate c. Show work that leads to c = 4.94

$$c = \frac{(7.03)\sin(27.59)}{\sin(41.2)} = 4.94$$

**There are Questions on Both Sides Start on Page 1**