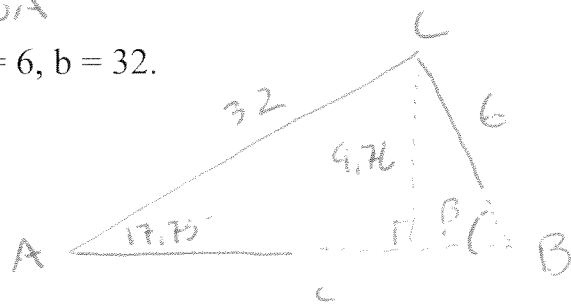


# Math 112: #26 A/B/C/D

A) Solve the triangle specified by  $\alpha = 17^\circ 45'$ ,  $a = 6$ ,  $b = 32$ .

SSA  
 $\alpha = 17.75$



$$h = 32 \sin 17.75^\circ$$

$$h = 9.76$$

$$6 < 9.76$$

no triangles will work

also

$$\frac{\sin 17.75^\circ}{6} = \frac{\sin \beta}{32}$$

$$\frac{32 \sin 17.75^\circ}{6} = \frac{6 \sin \beta}{6}$$

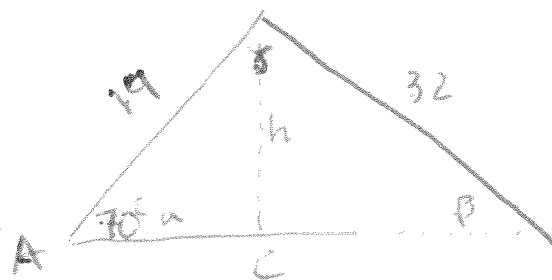
$$\frac{32 \sin 17.75^\circ}{6} = 1.6 \text{ too big}$$

$$\beta = \sin^{-1}(1.6) = \text{Err}$$

B) Solve the triangle specified by  $\alpha = 70^\circ$ ,  $a = 32$ ,  $b = 19$ .

$$h = 19 \sin 70^\circ = 17.85$$

$a > h > b$  1 triangle



$$\frac{\sin 70^\circ}{32} = \frac{\sin \beta}{19}$$

$$19 \sin 70^\circ = 32 \sin \beta$$

$$\frac{19 \sin 70^\circ}{32} = \sin \beta$$

$$\sin^{-1}\left(\frac{19 \sin 70^\circ}{32}\right) = \beta = 33.91^\circ$$

$$\gamma = 180^\circ - 70^\circ - 33.91^\circ = 76.09^\circ$$

$$\frac{\sin 70^\circ}{32} = \frac{\sin 76.09^\circ}{c}$$

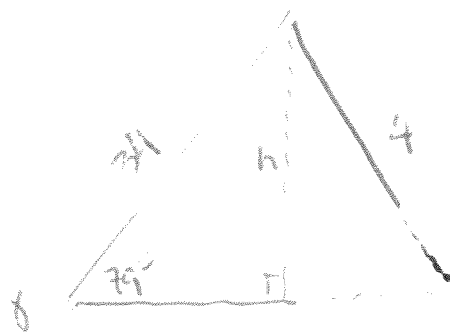
$$c \sin 70^\circ = 32 \sin 76.09^\circ$$

$$c = \frac{32 \sin 76.09^\circ}{\sin 70^\circ} = 33.06$$

C) Solve the triangle specified by  $\gamma = 79^\circ$ ,  $b = 34$ ,  $c = 4$ .

$$h = 34 \sin 79^\circ = 33.38$$

a < h  
 No Triangles  
 will work



also

$$\frac{\sin 79^\circ}{4} = \frac{\sin \beta}{34}$$

$$34 \sin 79^\circ = 4 \sin \beta$$

$$\frac{34 \sin 79^\circ}{4} = \sin \beta = 8.34$$

too big for sin

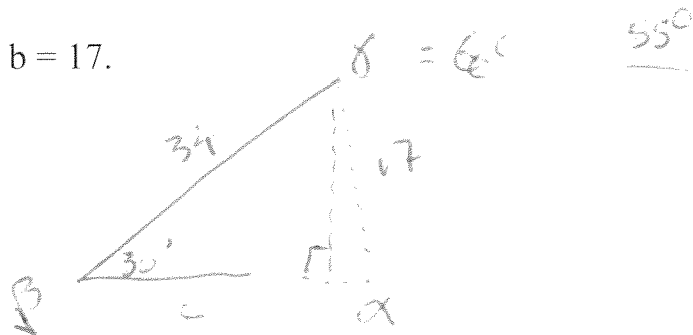
$$\sin^{-1}\left(\frac{34 \sin 79^\circ}{4}\right) = \text{err}$$

D) Solve the triangle specified by  $\beta = 30^\circ$ ,  $a = 34$ ,  $b = 17$ .

$$h = 34 \sin 30^\circ = 17$$

$$\therefore b = h$$

1 right triangle



$$c^2 + 17^2 = 34^2$$

$$c^2 = 34^2 - 17^2$$

$$c^2 = 867$$

$$c = \sqrt{867} = 29.44$$