1/ $A = 30^\circ \quad a = 2 \quad c = 6$

$$\frac{\sin C}{6} = \frac{\sin 30^\circ}{2}$$

$$\sin C = \frac{6}{2}\cdot\frac{1}{2} = \frac{3}{2} > 1$$

$\therefore$ No Triangle.

2/ $b = 3,\ c = 2 \quad A = 120^\circ$

$$K = \frac{1}{2}bc\sin A$$

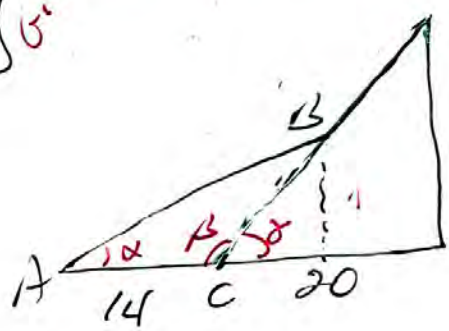
$$= \frac{1}{2}(3)(2)\sin(120^\circ)$$

$$= \frac{3\sqrt{3}}{2} \text{ unit}^2$$

#19 $\tan\gamma = \frac{6}{12} \Rightarrow \gamma = \tan^{-1}\frac{1}{2}$

$\tan\alpha = \frac{3}{12} = \frac{1}{4} \Rightarrow \alpha = \tan^{-1}\frac{1}{4}$ } Given

$\overline{AB} = |AB|$



$\beta = 180^\circ - \gamma$

$\beta = 180^\circ - \alpha - \beta$

$= 180^\circ - \alpha - 180^\circ + \gamma$

$= \gamma - \alpha$

$$\frac{AB}{\sin\beta} = \frac{14}{\sin\beta}$$

$$\overline{AB} = 14\,\frac{\sin(180^\circ - \gamma)}{\sin(\gamma - \alpha)}$$

$$h = \frac{14\tan\alpha\tan\gamma}{\tan\gamma - \tan\alpha}$$

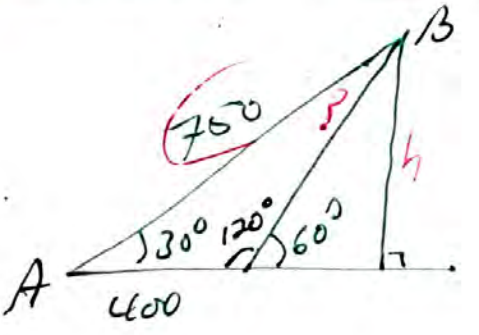
$\sin\alpha = \frac{h}{AB}$

$AB = \frac{h}{\sin\alpha}$

Ex

#21

$B = 180° - 30° - 120°$
$= 30°$



$$\frac{d}{\sin 120°} = \frac{400}{\sin 30°}$$

$$d = 400 \frac{\sqrt{3}}{2} \frac{1}{1/2}$$

$$= 400\sqrt{3} < 750$$

No, the tree will not be excavated.

$$h = \frac{400 \tan 30° \tan 60°}{\tan 60° - \tan 30°}$$

$$\sin 30° = \frac{h}{AB}$$

$$AB = 2h$$

$\tan 30° \tan 60° = 1$

$\tan 30° \tan(90° - 30°) = 1$

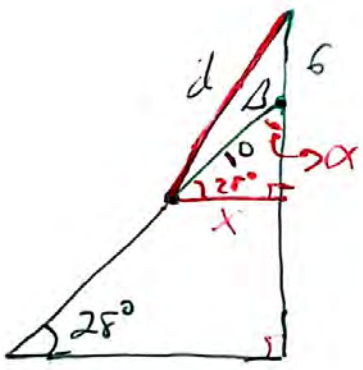
$\cot(30°)$

$\angle \alpha = 90^\circ - 28^\circ$
$= 62^\circ$

$\beta = 180^\circ - 62^\circ$
$= 118^\circ$

$d = \sqrt{6^2 + 10^2 - 2(6)(10)\cos 118^\circ}$

$= \sqrt{136 - 120\cos 118^\circ}$



$\cos 28^\circ = \frac{x}{10} \Rightarrow x = 10\cos 28^\circ$

$\sin 28^\circ = \frac{y}{10} \Rightarrow y = 10\sin 28^\circ$

$d = \sqrt{(6+y)^2 + x^2}$

#36 $h = \dfrac{900 \tan 35^\circ \tan 47^\circ}{\tan 47^\circ - \tan 35^\circ} + 2.$
