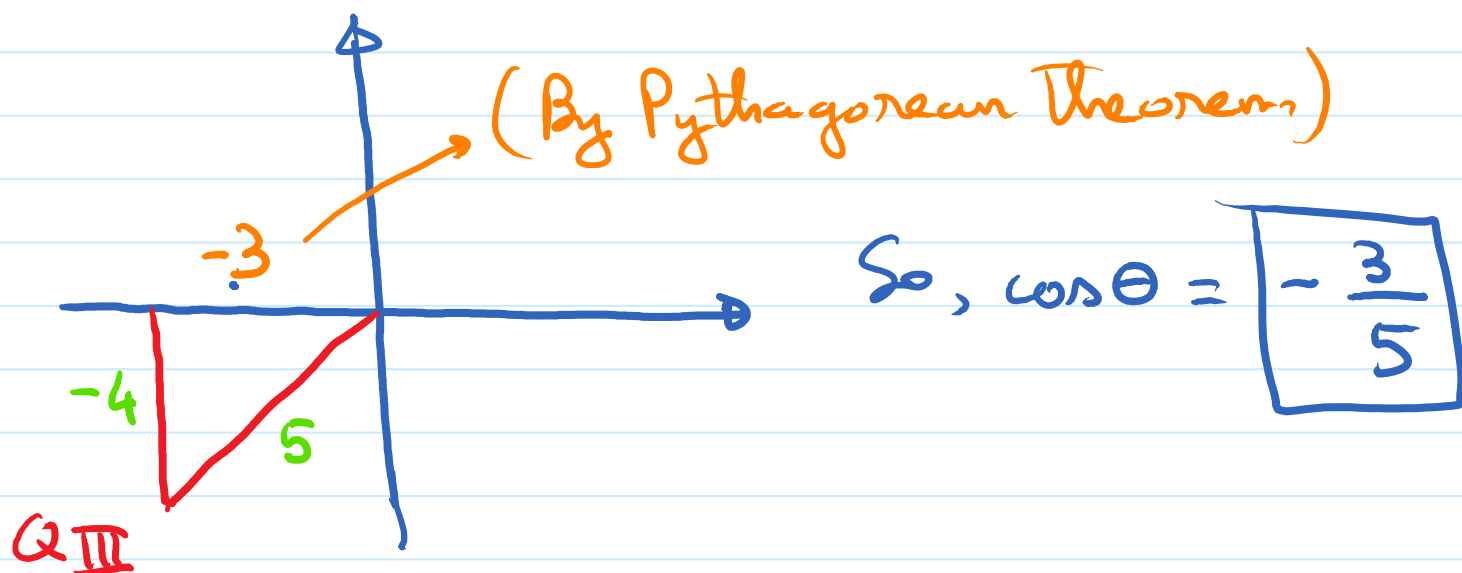


(12)



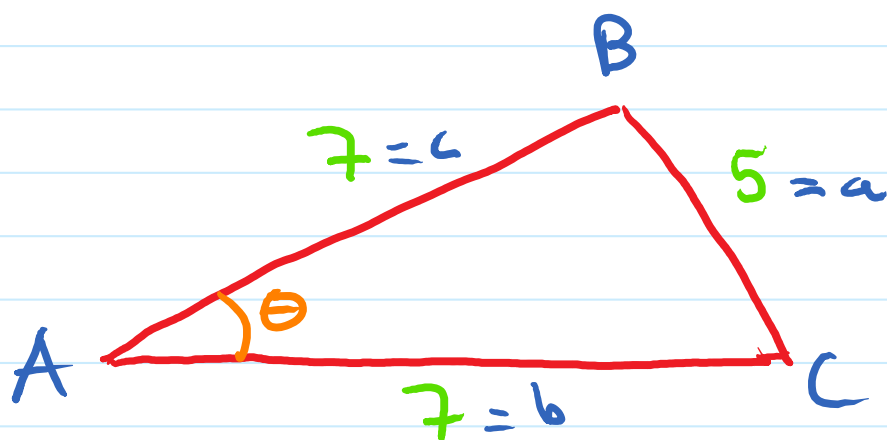
(13)

$$y = \sec^{-1}(-1) \rightarrow \sec y = -1$$

$$\rightarrow \cos y = \frac{1}{\sec y} = \frac{1}{-1} = -1$$

$$\rightarrow y = \cos^{-1}(-1) = \boxed{\pi}$$

(14)

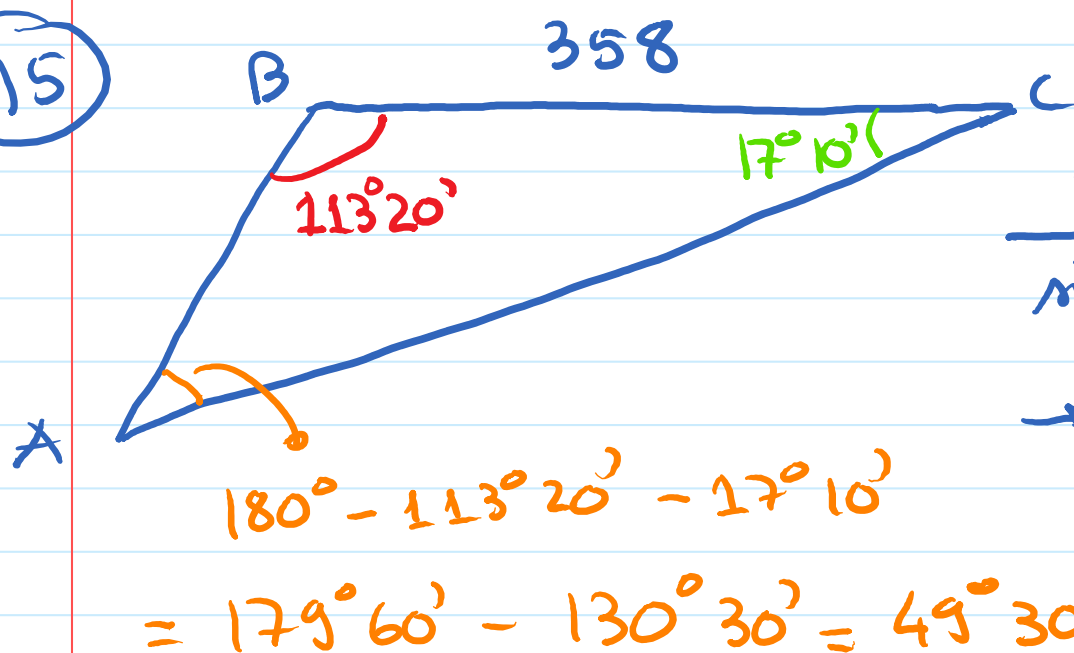


By the Law of Cosines:

$$\cos A = \frac{b^2 + c^2 - a^2}{2bc} = \frac{49 + 49 - 25}{2 \cdot 7 \cdot 7}$$

$$A = \cos^{-1}\left(\frac{73}{98}\right) \approx \boxed{42^\circ}$$

(15)



By the Law of Sines:

$$\frac{BC}{\sin A} = \frac{AB}{\sin C}$$

$$\rightarrow \frac{358}{\sin(49^\circ 30')} = \frac{AB}{\sin(17^\circ 10')}$$

$$= 179^\circ 60' - 130^\circ 30' = 49^\circ 30'$$

$$\text{So, } AB = \frac{358 \cdot \sin(17^\circ 10')}{\sin(49^\circ 30')} \approx \boxed{139}$$

$17 \frac{1}{6}$

$49 \frac{1}{2}$

(16)  $\cot \theta = \frac{1}{\tan \theta} = \frac{1}{8}$

(17)  $\angle B = 180^\circ - 24.1^\circ - 99.2^\circ = 56.7^\circ$

$a = BC$

$$\frac{BC}{\sin A} = \frac{AB}{\sin C}$$

$$\rightarrow \frac{BC}{\sin(24.1^\circ)} = \frac{55.7}{\sin(99.2^\circ)} \rightarrow BC = \frac{(55.7) \cdot \sin(24.1^\circ)}{\sin(99.2^\circ)}$$

$$\boxed{BC = 23}$$

$b = AC$

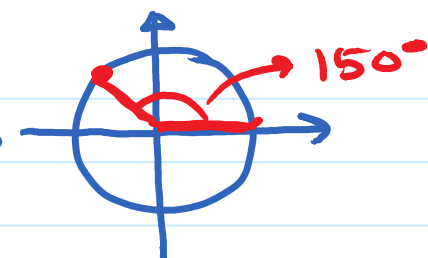
$$\frac{AC}{\sin B} = \frac{AB}{\sin C} \rightarrow \frac{AC}{\sin(56.7^\circ)} = \frac{55.7}{\sin(99.2^\circ)}$$

$$\rightarrow AC = \frac{(55.7) \cdot \sin(56.7^\circ)}{\sin(99.2^\circ)} \approx \boxed{47.2}$$

(18)  $y = 3 \cos\left(x + \frac{\pi}{6}\right)$

Amplitude = 3. Period =  $2\pi$ . No vertical translation.

Phase shift is  $\frac{\pi}{6}$  to the left.

19)  $510^\circ \rightarrow$  coterminal with  $150^\circ$ . 

$$\sin 510^\circ = \sin 150^\circ = \boxed{\frac{1}{2}}$$

$$\cos 510^\circ = \cos 150^\circ = \boxed{-\frac{\sqrt{3}}{2}}$$

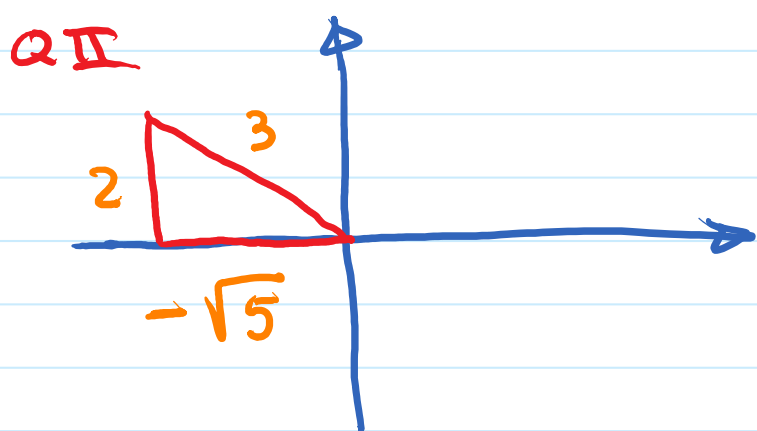
$$\tan 510^\circ = \tan 150^\circ = \frac{\sin 150^\circ}{\cos 150^\circ} = \frac{1/2}{-\sqrt{3}/2} = -\frac{1}{\sqrt{3}} = \boxed{-\frac{\sqrt{3}}{3}}$$

$$\csc 510^\circ = \frac{1}{\sin 510^\circ} = \boxed{2}$$

$$\sec 510^\circ = \frac{1}{\cos 510^\circ} = -\frac{2}{\sqrt{3}} = \boxed{-\frac{2\sqrt{3}}{3}}$$

$$\cot 510^\circ = \frac{1}{\tan 510^\circ} = -\frac{3}{\sqrt{3}} = \boxed{-\sqrt{3}}$$

20)



$$\cos \theta = -\frac{\sqrt{5}}{3}$$

$$\tan \theta = -\frac{2}{\sqrt{5}} = -\frac{2\sqrt{5}}{5}$$

$$\csc \theta = \frac{3}{2}$$

$$\sec \theta = -\frac{3}{\sqrt{5}} = -\frac{3\sqrt{5}}{5}$$

$$\cot \theta = -\frac{\sqrt{5}}{2}$$