

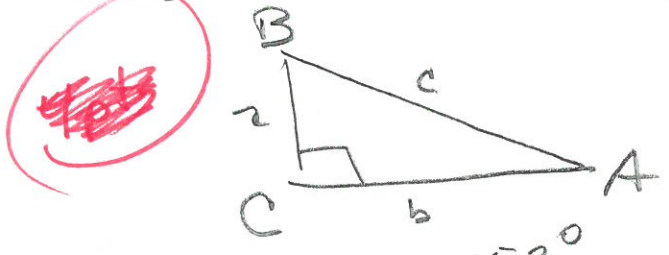
2 Simple Harmonic motion takes place when a point that moves up & down can be described by $d = a \sin(\omega t)$ or $a \cos(\omega t)$. Oscillating

3 The time for one complete cycle is $T = \frac{\text{period}}{\text{or wavelength}}$.

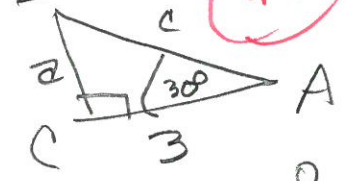
23 pts + 7 pts context

4 Cycles per second is FREQUENCY = $\frac{1}{\text{WAVELENGTH}}$

* 5-14 Solve the right triangle



5 $A = 30^\circ$, $b = 3$ (4 pts)



$$\frac{c}{3} = \sec 30^\circ$$

$$c = 3 \sec 30^\circ = 3 \left(\frac{2}{\sqrt{3}} \right) = \frac{6}{\sqrt{3}} \text{ OR } \frac{6\sqrt{3}}{3}$$

$$c = 2\sqrt{3}$$

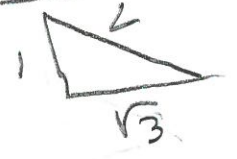
#5 ANS

$a \approx 1.73$

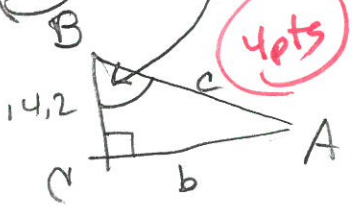
$B = 60^\circ$

$c \approx 3.46$

$C = 90^\circ$



14 $B = 65^\circ 12'$, $a = 14.2$ (4 pts) ROUND TO 2 decimal places



$$\frac{c}{14.2} = \sec \left(65^\circ + \left(\frac{12}{60} \right)^\circ \right)$$

$$c = 14.2 \sec \left(65^\circ + \left(\frac{1}{5} \right)^\circ \right)$$

$$c \approx 33.85368817 \approx 33.85 \approx c$$

$$A = 90^\circ - B = 24.8^\circ = A$$

$$b = 14.2 \tan(65.2^\circ) \approx 30.73161568 \approx 30.73 \approx b$$

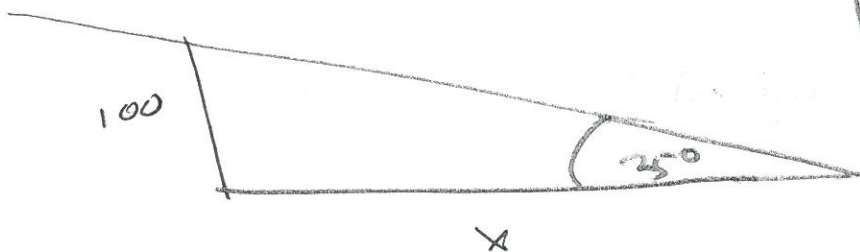
$$\frac{a}{3} = \tan 30^\circ$$

$$a = 3 \left(\frac{1}{\sqrt{3}} \right) = \frac{3}{\sqrt{3}} = \frac{3\sqrt{3}}{3} = \sqrt{3} = a$$

$$B = 90^\circ - 30^\circ = 60^\circ = B$$

$$C = 90^\circ$$

- (19) Sun is 25° above the horizon.
~~Find height of a building whose shadow~~
 is find length of the shadow of 100ft building



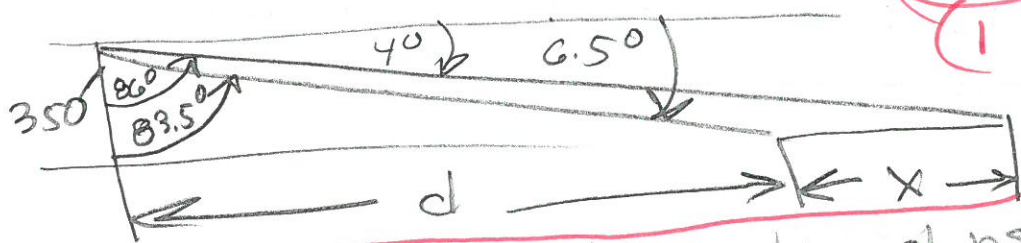
Let $x =$ length of the shadow in feet
 Lexicon

$$\frac{100}{x} = \tan 25^\circ \Rightarrow x = \frac{100}{\tan 25^\circ}$$

4pts (1 of them for lexicon)

$$\approx 214.4506921 \text{ ft}$$

- (24) A lighthouse observer is 350 ft above sea level. He observes that the angle of depression to 2 ships are 4° & 6.5° . How far apart are the ships?



4pts (1 for lex)

$x =$ the distance between the ships, in feet.
 $d =$ dist. to closer ship (ft)

Distance to closer:

$$\frac{350}{d} = \tan 83.5^\circ$$

$$\rightarrow d = 350 \tan(83.5^\circ) \approx 39.87746291$$

$$d+x = 350 \tan(86^\circ)$$

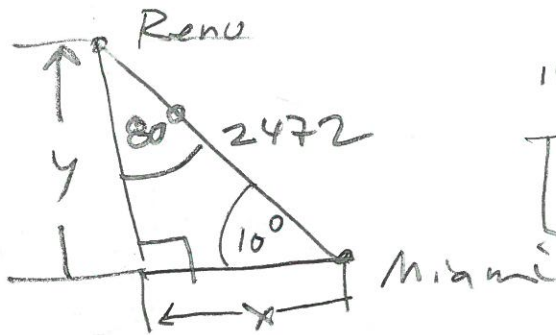
$$39.87746291 + x = 350 \tan 86^\circ \rightarrow x = 350 \tan 86^\circ - 39.87746291$$

$$\approx 4965.355727 \approx x$$

122 S 1.9

(42) Done in class

(36) A jet has a bearing of 100°
The distance between M. & Reno is 2472



$$180^\circ - 100^\circ = 80^\circ$$

1 pt Lex

x = how far West Reno
is relative to Miami
(in miles)

y = how far North of
Miami Reno is,
in miles.

$$\frac{x}{2472} = \cos 10^\circ$$

$$x = 2472 \cos 10^\circ$$
$$\approx 2434 \text{ miles} \approx y$$

$$\frac{y}{2472} = \sin 10^\circ$$

$$y = 2472 \sin 10^\circ$$
$$\approx 429. \approx y$$

3 pts for
distances
(i.e. same as
previously)

