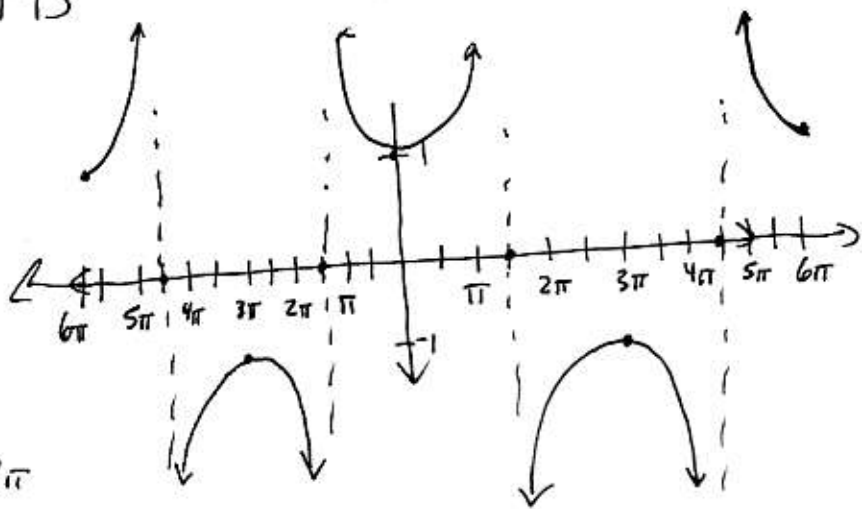


# HW 10 Solutions

## Math 143

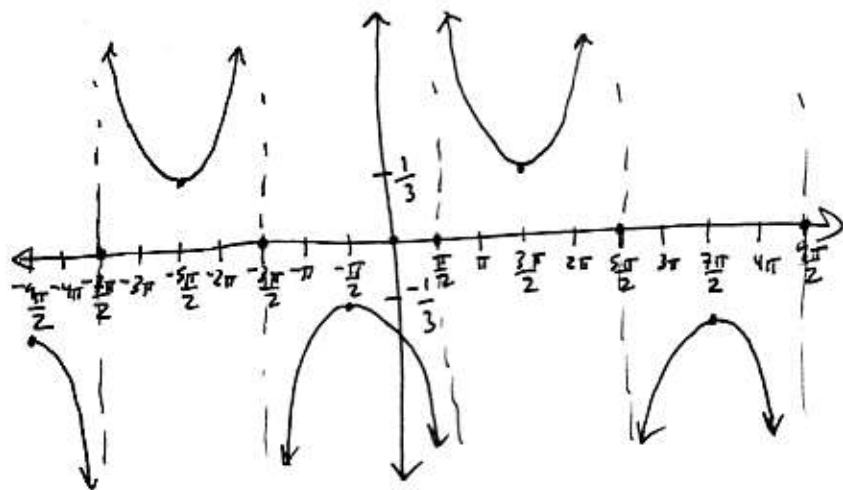
### Section 6.6

(33)  $y = \sec \frac{1}{3}x$   
 Period  $\frac{2\pi}{\frac{1}{3}} = 6\pi$   
 One period lies in  
 $0 \leq \frac{1}{3}x \leq 2\pi$   
 $0 \leq x \leq 6\pi$



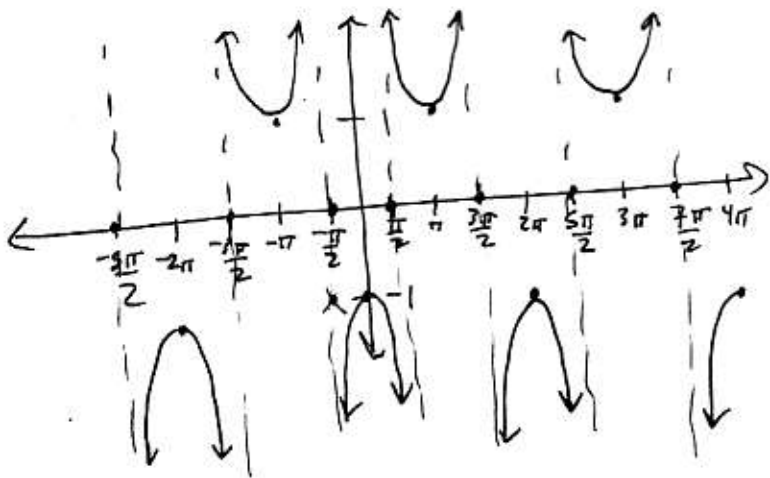
(37)  $y = -\frac{1}{3} \sec \left( \frac{1}{2}x + \frac{\pi}{4} \right)$

Period  $\frac{2\pi}{\frac{1}{2}} = 4\pi$   
 One period  $0 \leq \frac{1}{2}x + \frac{\pi}{4} \leq 2\pi$   
 $-\frac{\pi}{4} \leq \frac{1}{2}x \leq \frac{7\pi}{4}$   
 $-\frac{\pi}{2} \leq x \leq \frac{7\pi}{2}$



(39)  $y = \csc \left( x - \frac{\pi}{2} \right)$

Period:  $\frac{2\pi}{1} = 2\pi$   
 One period lies in  
 $0 \leq x - \frac{\pi}{2} \leq 2\pi$   
 $\frac{\pi}{2} \leq x \leq \frac{5\pi}{2}$



$$(45) y = 2 \csc\left(2x - \frac{\pi}{2}\right)$$

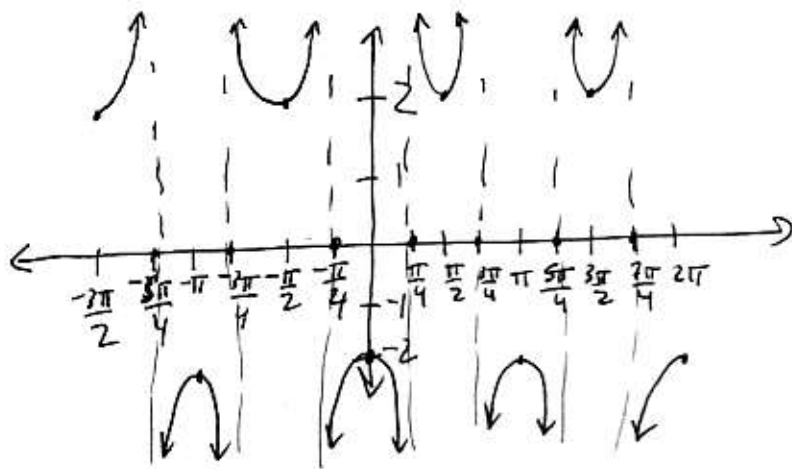
$$\text{Period} : \frac{2\pi}{2} = \pi$$

One period lies in

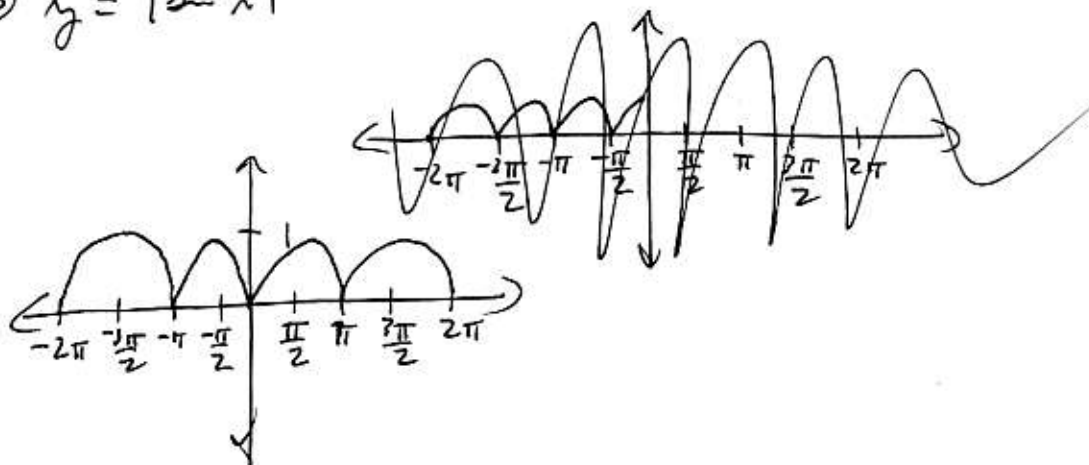
$$0 \leq 2x - \frac{\pi}{2} \leq 2\pi$$

$$\frac{\pi}{2} \leq 2x \leq \frac{5\pi}{2}$$

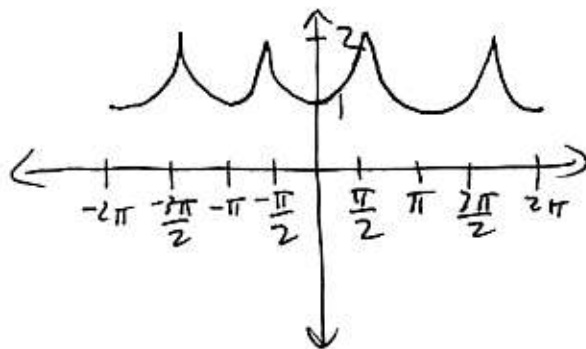
$$\frac{\pi}{4} \leq x \leq \frac{5\pi}{4}$$



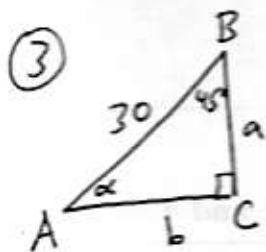
$$(55) y = |\sin x|$$



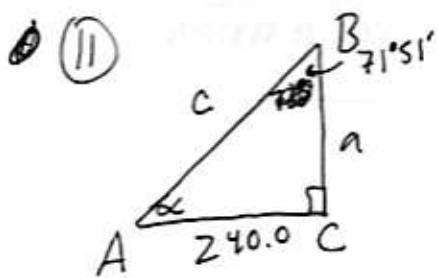
$$(59) y = -|\cos x| + 1$$



# Section 6.7

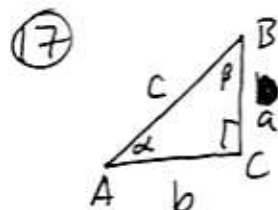


③  $\alpha = 45^\circ, a = b = \frac{30\sqrt{2}}{2} = 15\sqrt{2}$   
 $a = 30 \sin 45^\circ$



⑪  $\alpha = 90^\circ - 71^\circ 51'$   
 $\alpha = 18^\circ 9'$   
 $\tan 18^\circ 9' = \frac{a}{240.0}$   
 $240 \tan 18^\circ 9' = a$   
 $78.7 \approx a$

~~$b^2 + 78.7^2 = c^2$~~   
 $240^2 + 78.7^2 = c^2$   
 $c = 252.6$

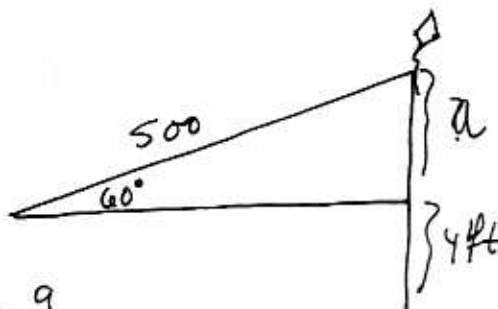


~~$\sin \alpha = \frac{b}{c}$~~  so  $b = c \sin \alpha$   
 ~~$\cos \alpha = \frac{b}{c}$~~  so  $b = c \cos \alpha$

⑱  $\tan \beta = \frac{b}{a}$   
 $a = \frac{b}{\tan \beta} = b \cot \beta$

⑲  $c^2 = a^2 + b^2$   
 $c^2 - a^2 = b^2$   
 $b = \sqrt{c^2 - a^2}$

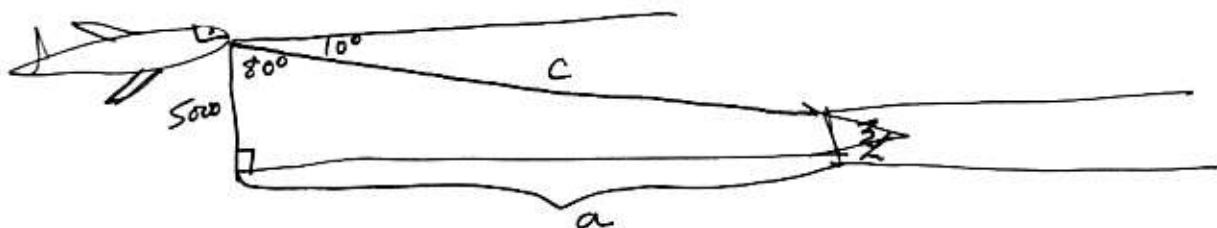
⑳



$\sin 60^\circ = \frac{a}{500}$   
 $500 \sin 60^\circ = a$   
 $a \approx 433 \text{ ft.}$

The kite is 437 ft above the ground.

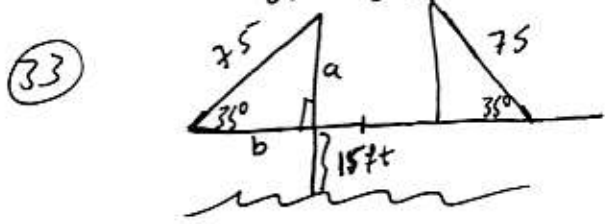
㉑



$\tan 80^\circ = \frac{a}{5000}$   
 $a = 5000 \tan 80^\circ$   
 $a \approx 28,256 \approx 28,400 \text{ ft}$

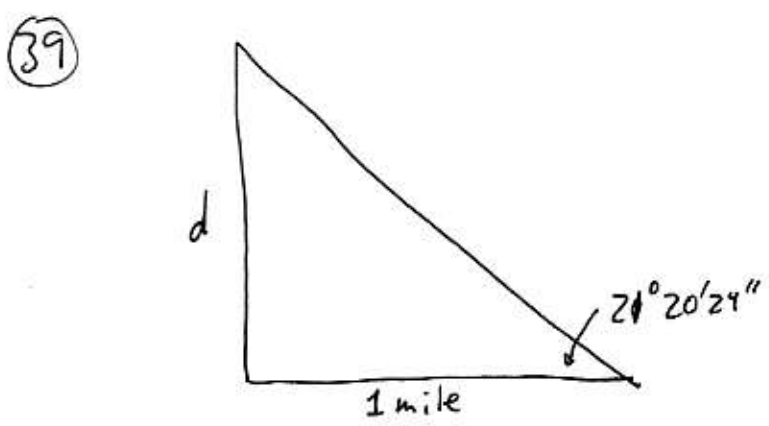
~~$\cos 80^\circ = \frac{5000}{c}$~~   
 $c = \frac{5000}{\cos 80^\circ}$   
 $c \approx 28,800 \text{ ft}$

(29)  $\tan 72^\circ 40' = \frac{d}{50}$   
 $d \approx 50 \tan 72^\circ 40' \approx 160 \text{ ft.}$

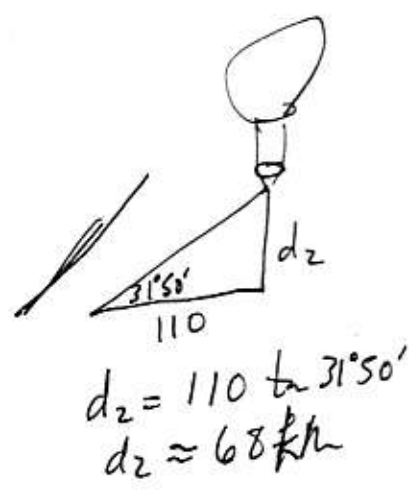
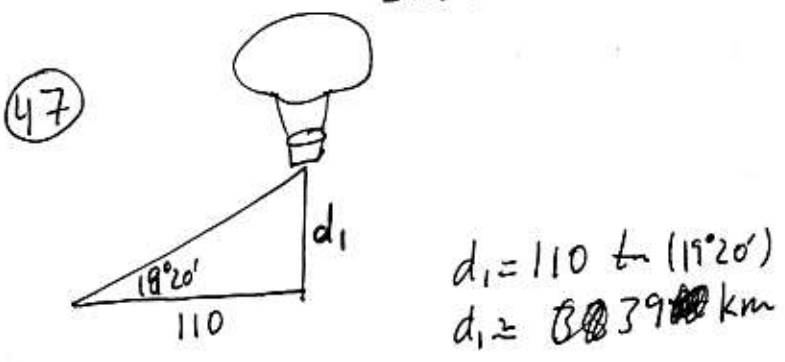


(9)  $\sin 35^\circ = \frac{a}{75}$   
 $a \approx 75 \sin 35^\circ$   
 $a \approx 43 \text{ ft.}$   
 $43 + 15 = 58 \text{ feet above the water.}$

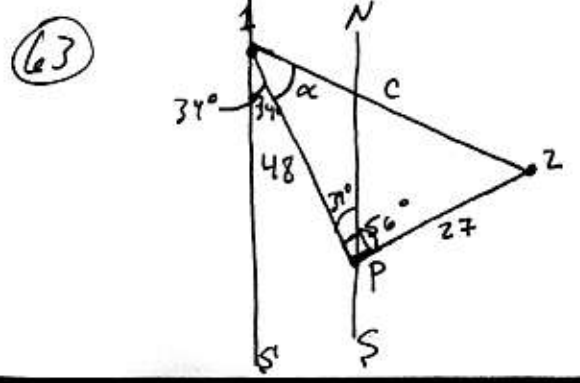
(6)  $\cos 35^\circ = \frac{b}{75}$   
 $b = 75 \cos 35^\circ$   
 $b \approx 61 \text{ feet.}$   
 So  $150 - 2 \cdot 61 \approx 28 \text{ ft.}$



$\tan 21^\circ 20' 29'' = \frac{d}{1}$   
 $d \approx 0.39 \text{ miles}$   
 So about 2063 ft tall.



N It measures about 29 km.



(a)  $c^2 = 48^2 + 27^2$   
 $c \approx 55 \text{ miles}$   
 (b)  $\tan \alpha = \frac{27}{48}$   
 $\alpha \approx 29^\circ$   
 $34^\circ + 29^\circ \approx 63^\circ$   
 The bearings from ship 1 to ship 2 is  $S 63^\circ E$ .