

Thursday Week 14

Final: study guide on Notes Page

, Tue: 10 am

Worth 25% of Grade

Exam 4: grades posted (current)

Brief review of Exam 4

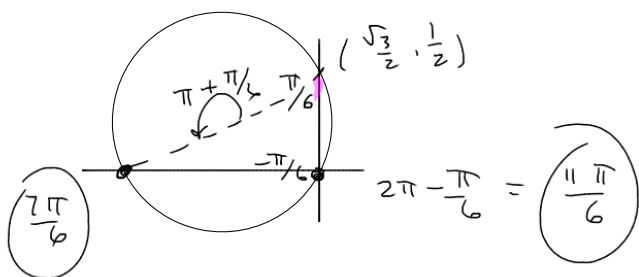
#3. Find all solutions.

(a)  $2\sin(x) + 1 = 0$

isolate  $x$

$\underbrace{\sin^{-1}(\sin(x))}_x = \sin^{-1}\left(-\frac{1}{2}\right)$

what angle in  $[-\frac{\pi}{2}, \frac{\pi}{2}]$  gives  $y$ -coord  $= -\frac{1}{2}$



Add multiples of period to each

$$\frac{11\pi}{6} + 2\pi k$$
$$\frac{7\pi}{6} + 2\pi k$$

$k \in \mathbb{Z}$

#3b

$$(\sin^2(x) - 1) \tan(x) = 0$$

goal: Find sols (x-values that work)

if  $A \cdot B = 0$

⊙ property

then  $A = 0$

or  $B = 0$

(1)  $\sin^2(x) - 1 = 0$

$$\sin^2(x) = 1$$

$$\sin(x) = \pm 1$$

$$\sin(x) = 1$$

$$x = \frac{\pi}{2}$$

$$\sin(x) = -1$$

$$x = \frac{3\pi}{2}$$

(2)  $\tan(x) = 0$

$$x = 0$$

$$x = n\pi \quad (n \in \mathbb{Z})$$

(notice  $x=0$  is accounted for)

$$x = \frac{\pi}{2} + \pi n$$

# 3c

$$\csc(x) \tan(x) - \csc(x) = 0$$

Hint: basic algebra still applies

factor

$$\csc(x) \tan(x) = \csc(x)$$

$$\tan(x) = 1$$

$$\frac{1}{\sin(x)} = 0$$

|

no sol's

$$\csc(x) [\tan(x) - 1] = 0$$

[zero rule]

general strategy

get  
csc x  
in  
terms  
of  
sin x

$$\csc(x) = 0$$

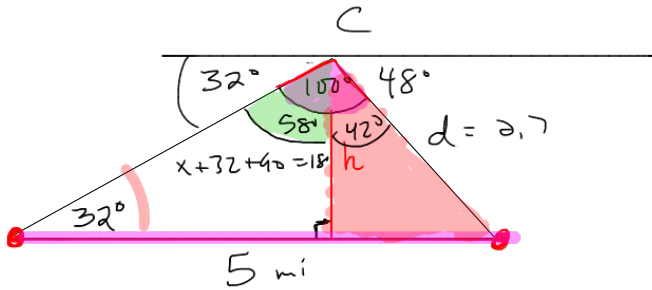
or

$$\tan(x) - 1 = 0$$

$$\tan(x) = 1$$

$$x = \frac{\pi}{4} + n\pi$$

#5



Find Elevation.

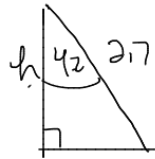
1. Find  $h$
2.  $\angle C + 32 + 48 = 180$   
 $\angle C = 100^\circ$

$$\frac{d}{\sin 32} = \frac{5}{\sin 100}$$

Law of Sines, edge must be the opposite of the angle

$$d = \sin 32 \cdot \frac{5}{\sin 100} \approx 2.7$$

Right Angled Trig



$$\cos 42^\circ = \frac{h}{2.7}$$

$$(\cos 42^\circ) \cdot 2.7 = h \approx \underline{2 \text{ miles}}$$