

$$\sin \theta = \frac{3}{11}$$

terminal side lies  
in QII.

Draw the pic.

Find other 5 triqs.

Draw all pics for  $\sin \theta = \frac{3}{11}$  for  $0 \leq \theta < 2\pi$

Give solutions, in degrees, to 4 places.

How tall is a building, if its shadow  
is 500 feet long when the sun is  $10^\circ$   
above the horizon?

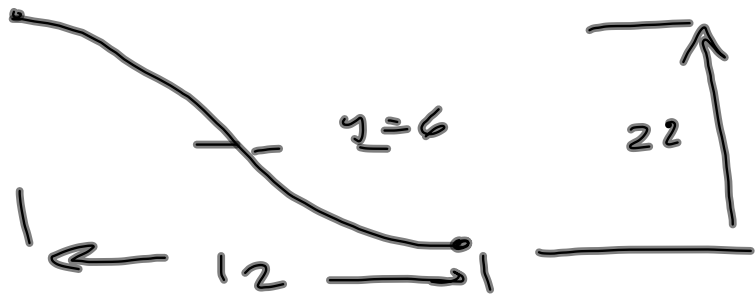
Graph  $13 \sin\left(\frac{\pi}{10}(x-3)\right) + 7$

High (5, 17)

Low (17, -5)

$$17 - 5 = 12 \Rightarrow T = 24$$

$$17 - (-5) = 22$$



$$y = 11 \cos\left(\frac{\pi}{12}(x-5)\right) + 6$$

$$bx = 2\pi \text{ when}$$

$$x = 24$$

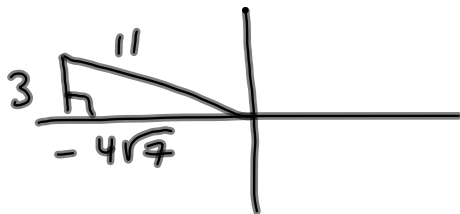
$$24b = 2\pi$$

$$b = \frac{\pi}{12}$$

$$\frac{17 + (-5)}{2} = \frac{12}{2}$$

$$\sin \theta = \frac{3}{11}$$

Draw the pic.



terminal side lies  
in QII.

Find other 5 trig.

$$\begin{aligned} & \sqrt{11^2 - 3^2} \\ &= \sqrt{121 - 9} \\ &= \sqrt{112} \\ &= 4\sqrt{7} \end{aligned}$$

$\begin{array}{l} 2 \sqrt{112} \\ 2 \sqrt{56} \\ 2 \sqrt{28} \\ 2 \sqrt{14} \\ 7 \end{array}$

$$\sin \theta = \frac{3}{11}$$

$$\csc \theta = \frac{11}{3}$$

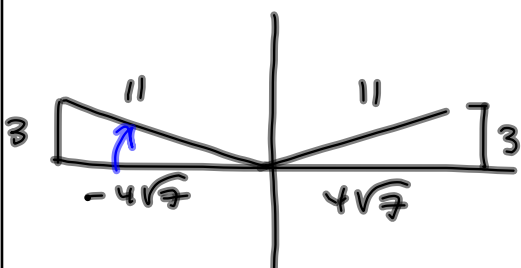
$$\cos \theta = -\frac{4\sqrt{7}}{11}$$

$$\sec \theta = -\frac{11}{4\sqrt{7}}$$

$$\tan \theta = -\frac{3}{4\sqrt{7}}$$

$$\cot \theta = -\frac{4\sqrt{7}}{3}$$

Draw all pics for  $\sin \theta = \frac{3}{11}$  for  $0 \leq \theta < 2\pi$   
 Give solutions, in degrees, to 4 places.



$$\theta \approx 15.8266^\circ, 164.1734^\circ$$

$$180^\circ - 15.8266^\circ \approx 164.1734^\circ$$

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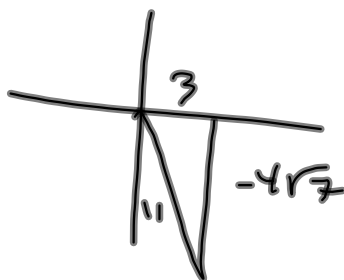
sin-1(3/11)
.2762266308
Ans*π/180
.0048210642
sin-1(3/11)*180/π
15.82662013
    
```

← Check Mode! I'm in radians!

← upside-down!?

← At last!

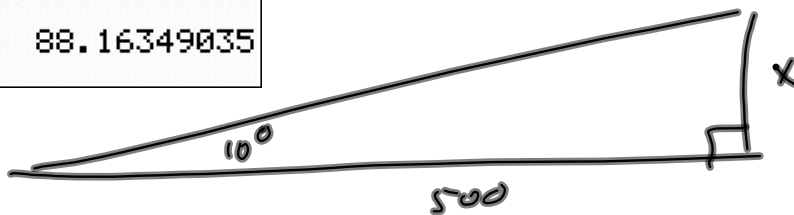
Two pics for  $\cos \theta = \frac{3}{11}$ ?



How tall is a building, if its shadow is 500 feet long when the sun is  $10^\circ$  above the horizon?

```
.0048210642  
sin-1(3/11)*180/π  
15.82662013  
500tan(10*π/180)  
88.16349035
```

88.1635 ft.



$$\tan 10^\circ = \frac{x}{500}$$

$$x = 500 \tan 10^\circ$$

$$13 \sin\left(\frac{\pi}{10}(x-3)\right) + 7$$

$$\frac{\pi}{4} \cdot \frac{8}{\pi}$$

Test 1 original solution for

$$10 \sin\left(\frac{\pi}{8}x - \frac{\pi}{4}\right) + 15$$

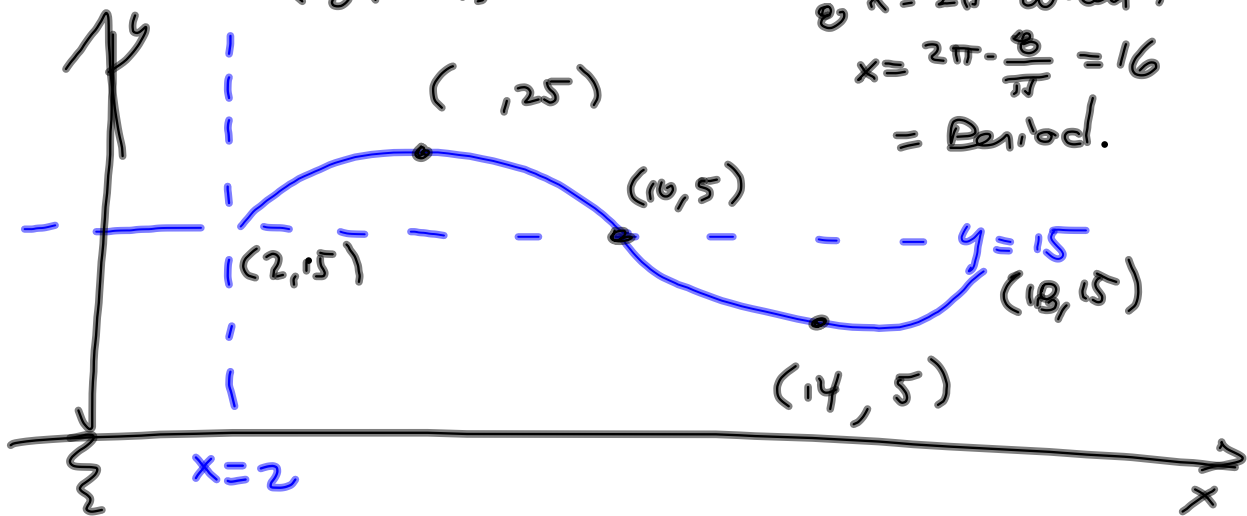
$$= 10 \sin\left(\frac{\pi}{8}(x-2)\right) + 15$$

$$\frac{\pi}{8}(x-2)$$

$$\frac{\pi}{8}x = 2\pi \text{ when?}$$

$$x = 2\pi \cdot \frac{8}{\pi} = 16$$

= Period.



$$13 \sin\left(\frac{\pi}{10}(x-3)\right) + 7$$

$$\frac{\pi}{10}x = 2\pi \text{ when?}$$

$$x = 2\pi \cdot \frac{10}{\pi} = 20$$

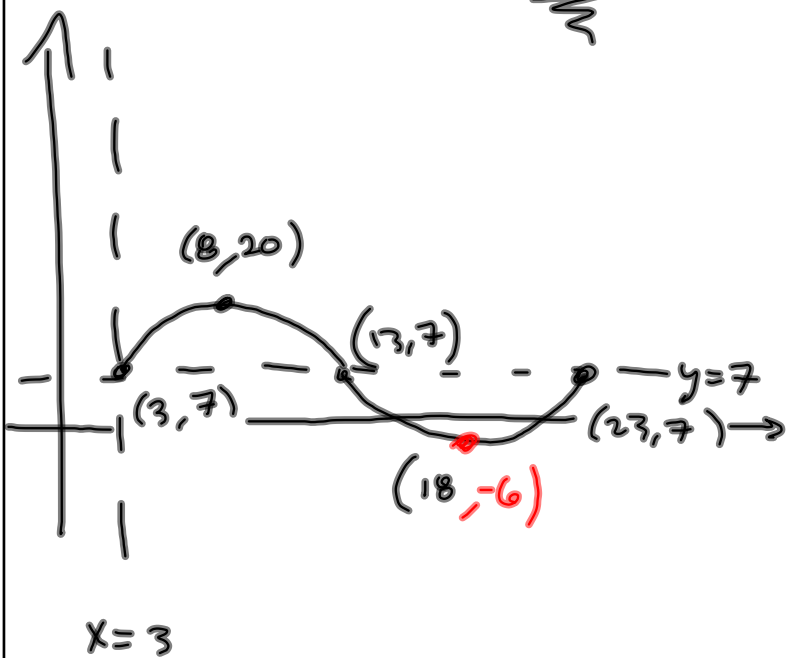
= Period.

Start @  $x=3$

End @  $x=23$

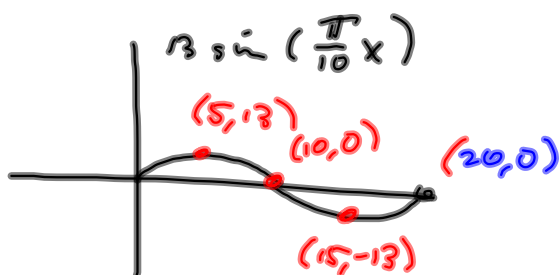
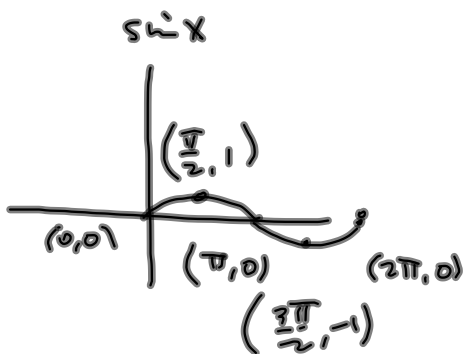
Mid:  $y=7$

Amp: 13



$$13 \sin\left(\frac{\pi}{10}(x-3)\right) + 7$$

Page 2 Test 1. Same.

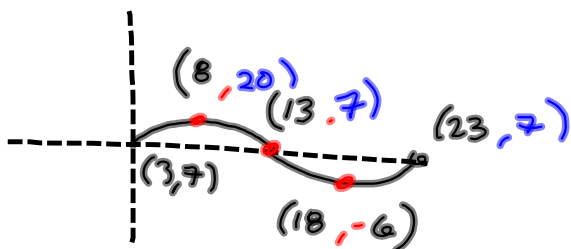


$$\frac{10}{\pi} \cdot \frac{\pi}{2} = 5$$

$$\frac{10}{\pi} \cdot 2\pi$$

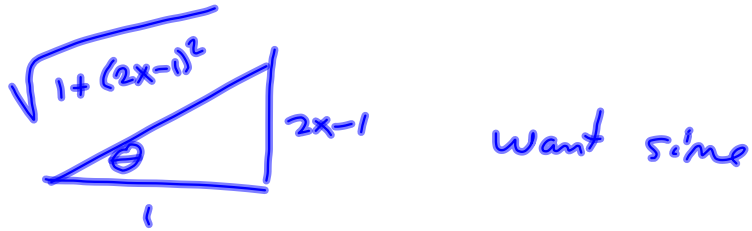
$$\frac{10}{\pi} \cdot \pi = 10$$

$$\frac{10}{\pi} \cdot \frac{3\pi}{2} = 15$$



$$13 \sin\left(\frac{\pi}{10}(x-3)\right) + 7$$

$$\sin(\arctan(2x-1)) = \sin \theta$$

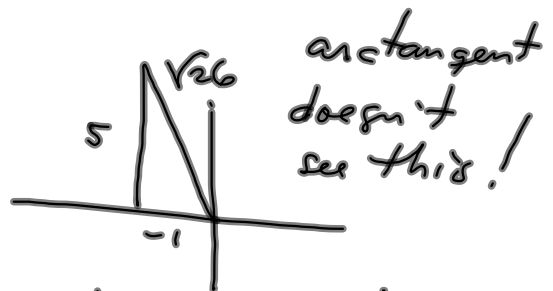


$$\sqrt{1+(2x-1)^2} = \sqrt{1+4x^2-4x+1}$$

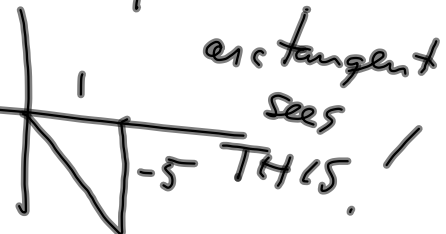
$$= \sqrt{4x^2-4x+2} \text{ so?}$$

$$\frac{2x-1}{\sqrt{(2x-1)^2+1}} = \sin \theta$$

$$\sin(\arctan(5)) = \frac{5}{\sqrt{26}}$$

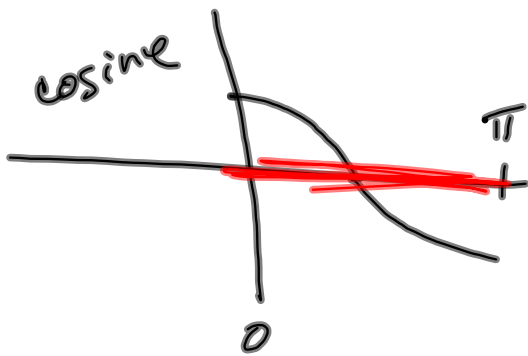


$$\sin(\arctan(-5)) = \frac{5}{\sqrt{26}}$$



Nope  $\sin(\arctan(-5)) = -\frac{5}{\sqrt{26}}$





arc cos(x) has  
range  $[0, \pi]$   
b/c that's the  
domain to which  
we restrict cosine.

