There was
an LCQ
yesterday

(I'll be
here after
school
and tomorrow
AM)

Pick
UP
The
warm
UP
.·

HW
HELP

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① $225°$

$= 225° \cdot \dfrac{2\pi}{360°}$

$225° \times \dfrac{\pi}{180°}$

$\approx \boxed{3.93 \text{ radians}}$

② Convert 13.5 radians to degrees

or $\frac{180°}{2\pi}$

$13.5_{rad} \cdot \dfrac{360°}{2\pi}$

$\approx \boxed{773.49°}$

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that $\sin(\theta) = \frac{3}{10}$

(Assume that θ is an angle in quadrant IV)

$$\boxed{\cos^2(\theta) + \sin^2(\theta) = 1}$$

$$\left[\cos\theta\right]^2 + \left[\sin\theta\right]^2 = 1$$

$$\cos^2\theta + \left[\tfrac{3}{10}\right]^2 = 1$$

$$\cos^2(\theta) + \tfrac{9}{100} = 1$$

$$\cos^2(\theta) = 1 - \tfrac{9}{100}$$

$$\cos^2(\theta) = \tfrac{100}{100} - \tfrac{9}{100}$$

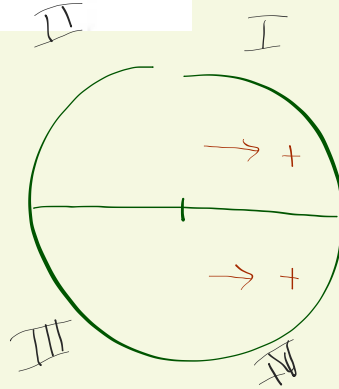$$\cos^2(\theta) = \tfrac{91}{100}$$

$$\cos(\theta) = \pm\sqrt{\tfrac{91}{100}}$$

$$\cos(\theta) = \sqrt{\tfrac{91}{100}}$$

$$\boxed{\cos\theta = \tfrac{\sqrt{91}}{10}}$$

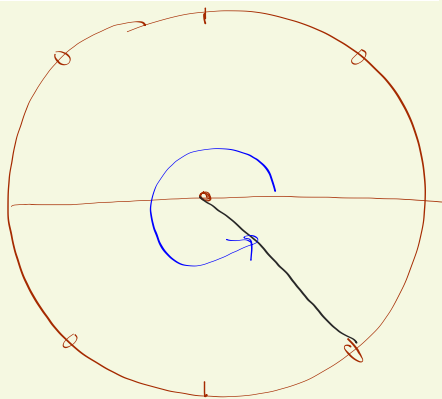④ Circle the quadrants where $\cos\theta$
is positive

Ⓘ   Ⅱ   Ⅲ   Ⓥ

Ⅱ   Ⅰ

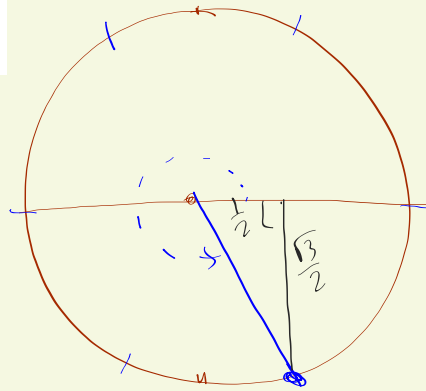$\rightarrow$ +

$\rightarrow$ +

Ⅲ

Ⅳ

and label
⑤ Draw a rotation angle of

$\frac{7\pi}{4}$

$\frac{\pi}{4}$

⑥ Find the exact value of $\cos\left(\frac{5\pi}{3}\right) = \frac{1}{2}$

$\frac{\pi}{3}$

$\frac{\pi}{3}$

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

$\frac{3\pi}{3}$

$\frac{4\pi}{3}$

$\frac{5\pi}{3}$

$\frac{6\pi}{6}$

$\left(\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$

$\frac{\sqrt{3}}{2}$

$\frac{1}{2}$
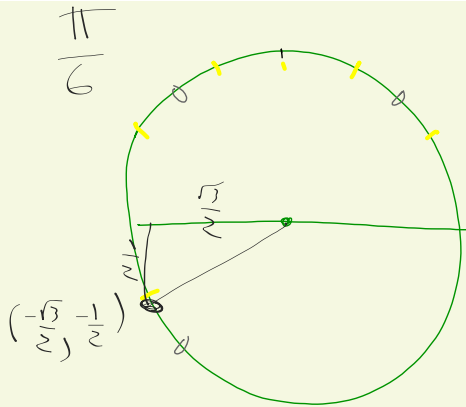
if $\sin\left(\frac{5\pi}{3}\right) = -\frac{\sqrt{7}}{2}$

⑦ Find the exact value of $\sin(8\pi) = 0$

$(1, 0)$
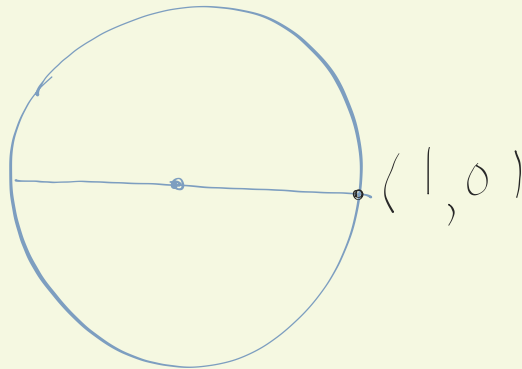
⑧ Find the exact value of
tan $\left(\frac{7\pi}{6}\right)$

$= \dfrac{\sin\left(\frac{7\pi}{6}\right)}{\cos\left(\frac{7\pi}{6}\right)} = \dfrac{\frac{-1}{2}}{-\frac{\sqrt{3}}{2}}$
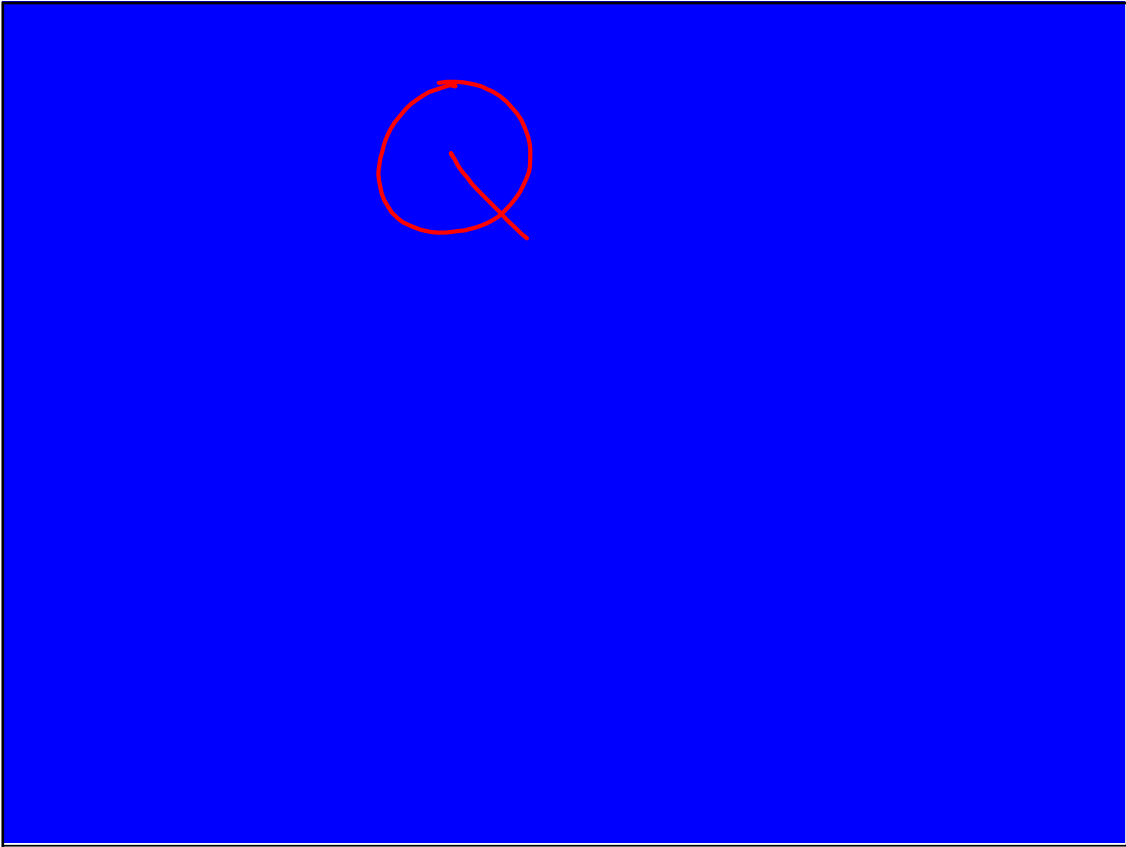
$\frac{\pi}{6}$

$\left(-\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

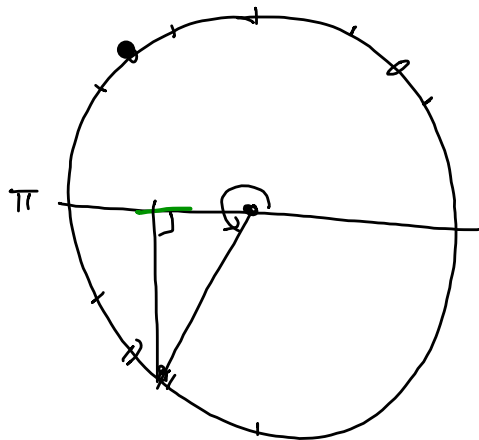$-\frac{1}{2} \cdot -\frac{2}{\sqrt{3}}$

$\frac{1}{\sqrt{3}}$

$\frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \boxed{\frac{\sqrt{3}}{3}}$

How far did you
get yesterday ?

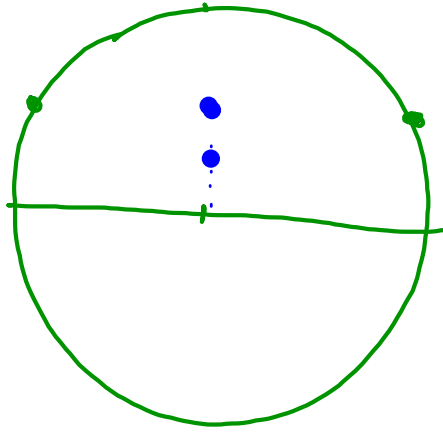90(a) $\sin(4)$ (b) $\sin\left(\dfrac{4\pi}{3}\right)$

π

91   $\sin \theta = 0.5$

degrees   radians
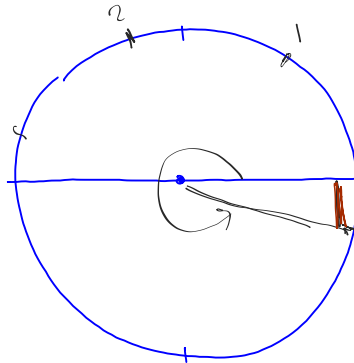
2

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93   6 radians $2\pi \simeq$

ⓐ Approx. how
   many degrees

ⓑ Estimate

   $\boxed{\sin(6)} \approx -.2$

25

94   (a) $\log(10)$ (b) $\log\sqrt{10}$

(c) $\log(0)$

95

$$\frac{\text{Future}}{\text{Value}} = \frac{\text{Present}}{\text{Value}} \left(1 + r \right)^{t} \leftarrow \text{\# years}$$

annual interest rate

(compounded annually)

$$20 = 10 \left(1 + r \right)^{15}$$

200   100

2

$$2 = \left(1 + r \right)^{15}$$

$$\sqrt[15]{2} = 1 + r$$

96   Angle A

$$\sin(A) = \frac{3}{10} \qquad \tan(A) = \frac{\frac{3}{10}}{\underline{\qquad}}$$

$$\cos^{2}(A) + \sin^{2}(\theta) = 1$$

$$\cos^{2}(A) + \left(\frac{3}{10} \right)^{2} = 1$$

2 5

97b $f(x) = \log_7(x)$
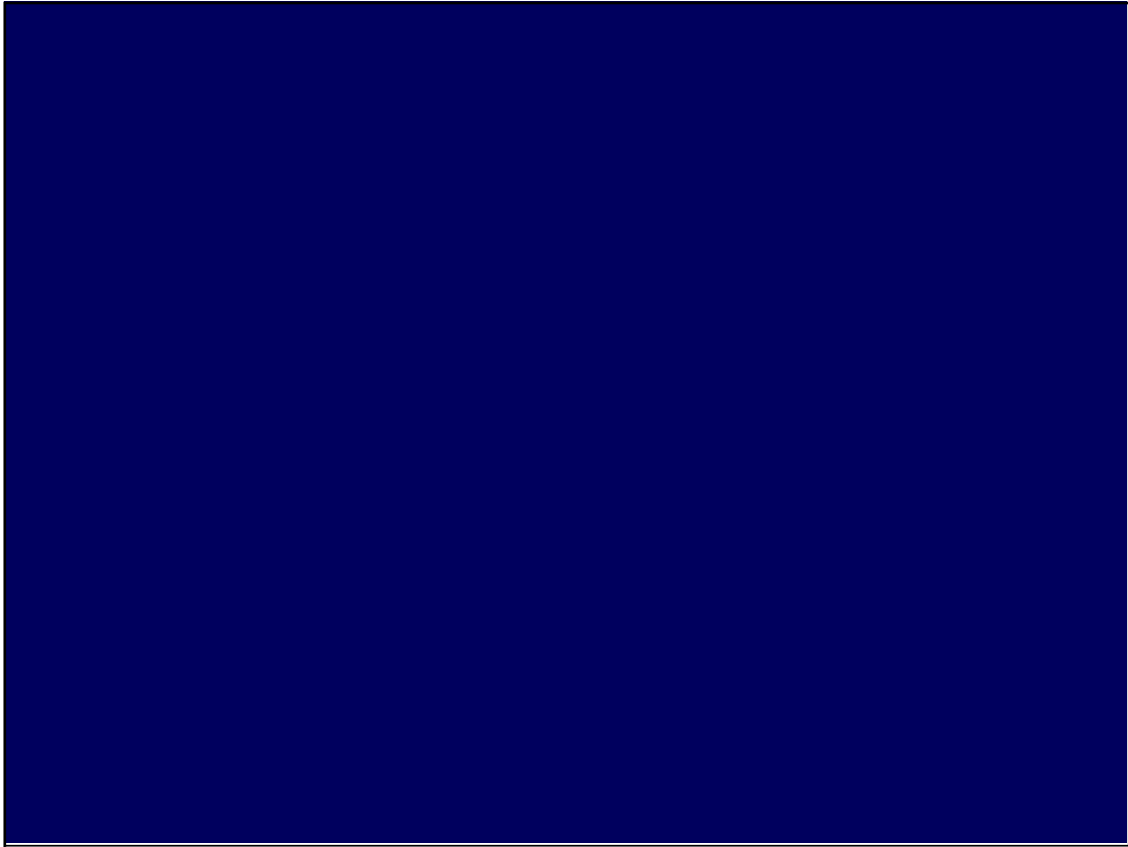
$x = \log_7(y)$

$7^x = y$

$y = 7^x$

Aim :
Today :

Analyze
sin(θ) graph

← NOTES

• (and graph of tan θ later)

sin(θ)

θ
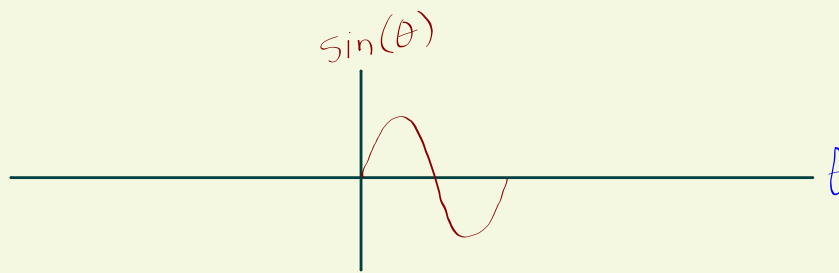
Add additional cycles
both directions
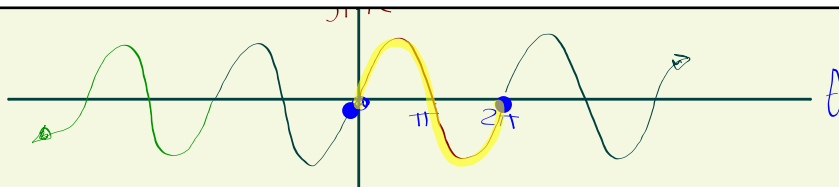
Period [length of 1 cycle]   Per = 2π

Domain $-\infty < \theta < \infty$

Range $-1 \leq \sin(\theta) \leq 1$

θ-intercepts   every π radians , $\theta = n\pi$

Symmetry $180°$ Rotational Symmetry
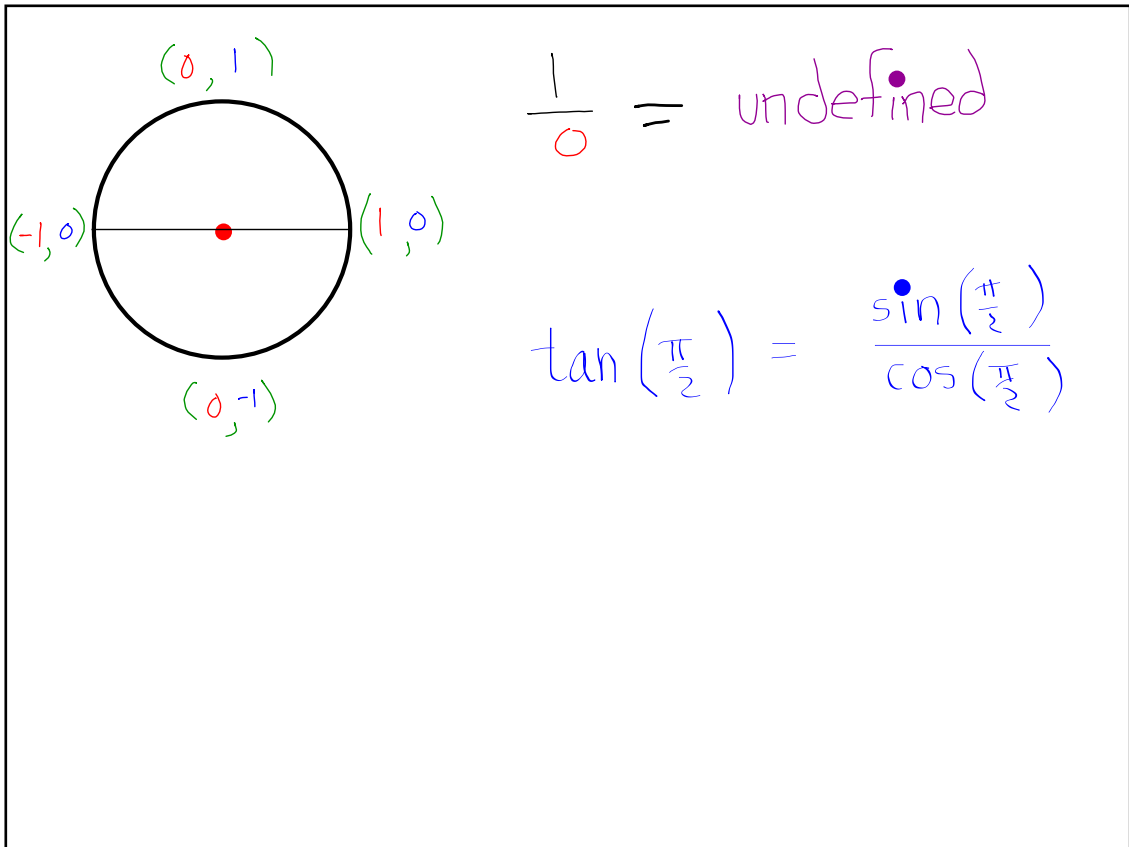
Analyze $f(\theta) = \tan\theta$

slope function
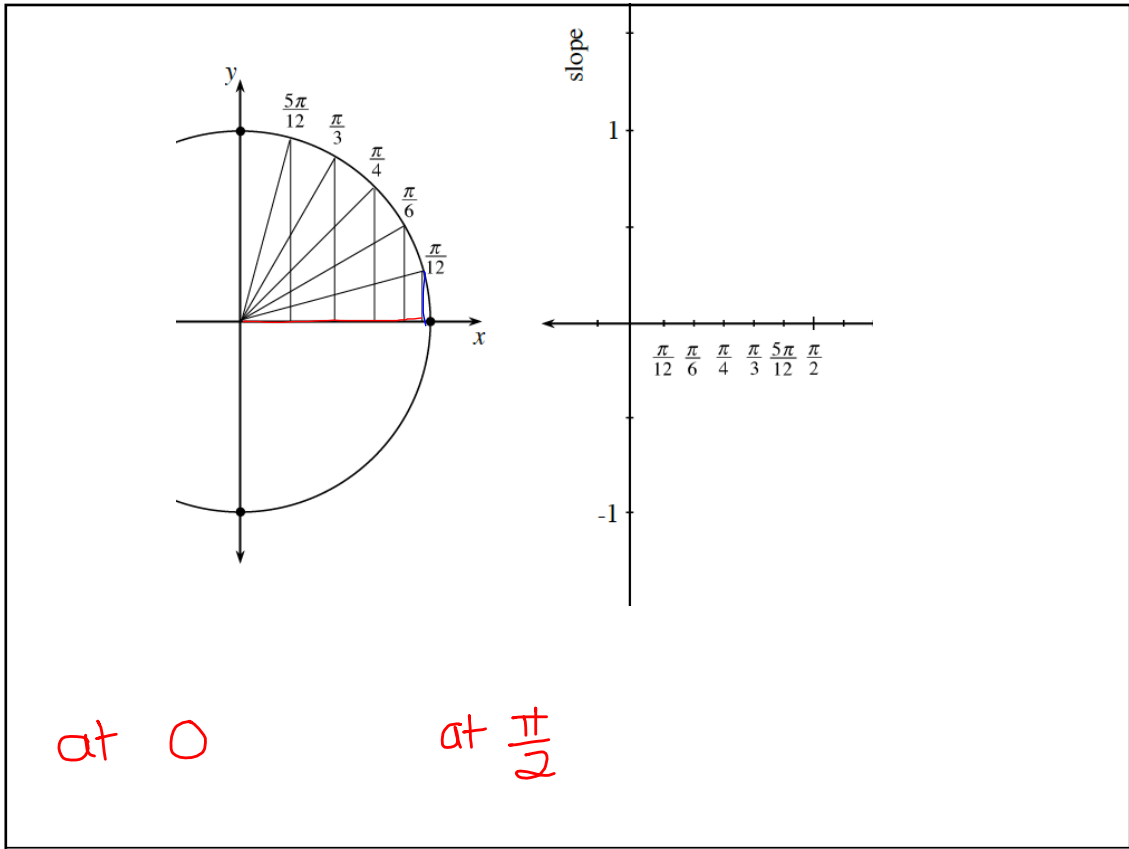
$$\tan\theta = \frac{\sin\theta}{\cos\theta}$$

$$\frac{0}{1} = 0$$

$$\frac{1}{0} = \text{undefined}$$

y

$\frac{5\pi}{12}$ $\frac{\pi}{3}$

$\frac{\pi}{4}$

$\frac{\pi}{6}$

$\frac{\pi}{12}$

x

slope

1

$\frac{\pi}{12}$ $\frac{\pi}{6}$ $\frac{\pi}{4}$ $\frac{\pi}{3}$ $\frac{5\pi}{12}$ $\frac{\pi}{2}$

-1

at 0   at $\frac{\pi}{2}$

$(0, 1)$

$(-1, 0)$ $(1, 0)$

$(0, -1)$

$\frac{1}{0} = $ undefined

$\tan\left(\frac{\pi}{2}\right) = \dfrac{\sin\left(\frac{\pi}{2}\right)}{\cos\left(\frac{\pi}{2}\right)}$

JUST
Watch

slope

1

$\frac{5\pi}{12}$ $\frac{\pi}{3}$

$\frac{\pi}{4}$

$\frac{\pi}{6}$

$\frac{\pi}{12}$

y

x

$\frac{\pi}{12}$ $\frac{\pi}{6}$ $\frac{\pi}{4}$ $\frac{\pi}{3}$ $\frac{5\pi}{12}$ $\frac{\pi}{2}$ π $\frac{3\pi}{2}$ 2π θ

-1

-2

180   360

son 7.1.7 Resource Page

at $\frac{3\pi}{2}$

degrees first $0° < \theta < 360°$

• • ZOOM TRIG

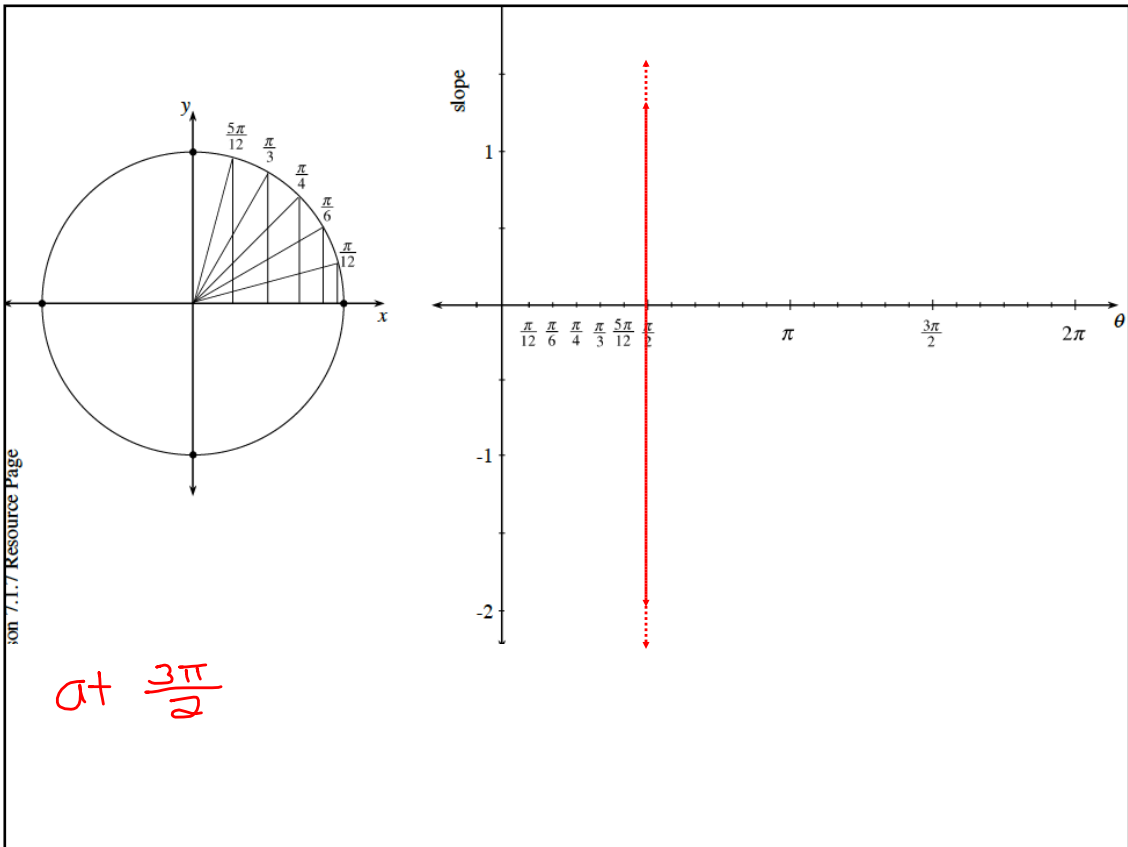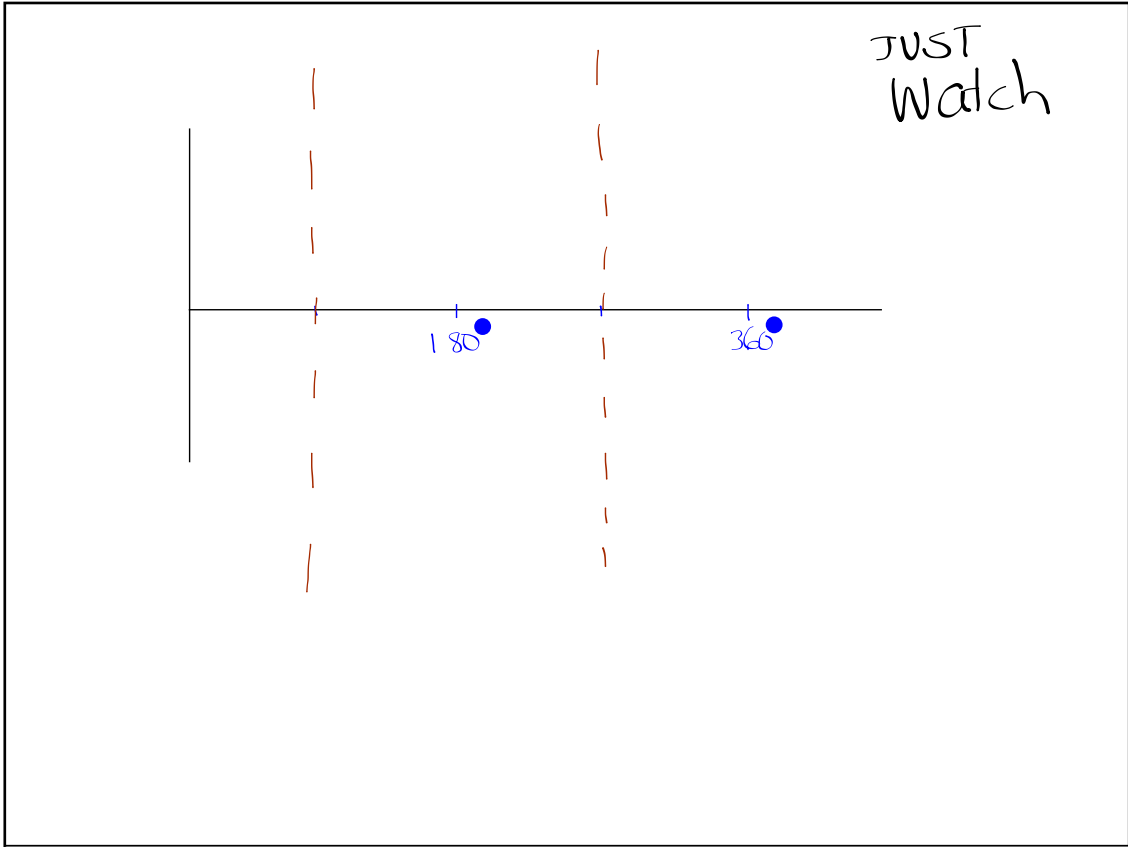ᴺᵒʷ radians $0 < \theta < 2\pi$
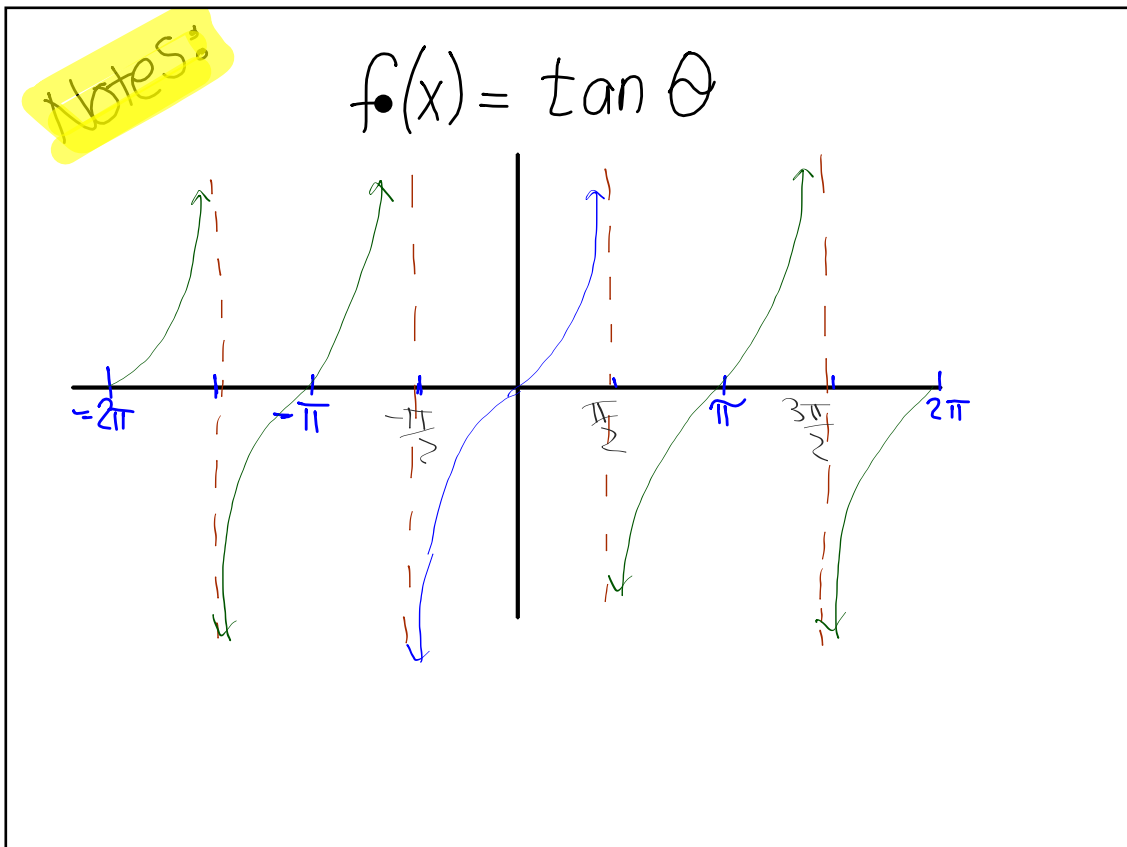
ZOOM TRIG

Notes:

$$f•(x) = \tan \theta$$

<u>radians</u>   <u>degrees</u>

Period

Domain

Range

θ - intercepts

Symmetry

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⑦ $\tan\left(\dfrac{7\pi}{6}\right)$ $=\dfrac{\sin\left(\dfrac{7\pi}{6}\right)}{\cos\left(\dfrac{7\pi}{6}\right)}=$ _____

(,)

Brain Break

Assignment

Worksheet 7.1.7