Schedule

HW HELP →

1. Lesson - the Tangent Graph
2. Warm Up
3. Check Homework

Have your GDC ready

Aim Today:

← NOTES

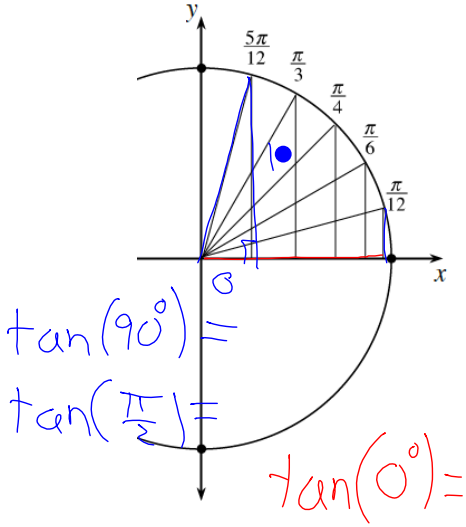
Analyze $f(\theta) = \tan\theta$

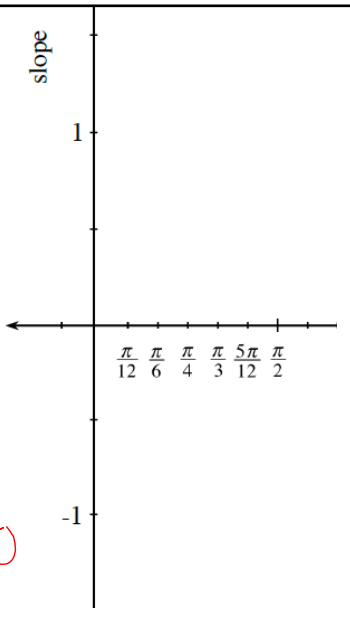
slope function

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

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

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



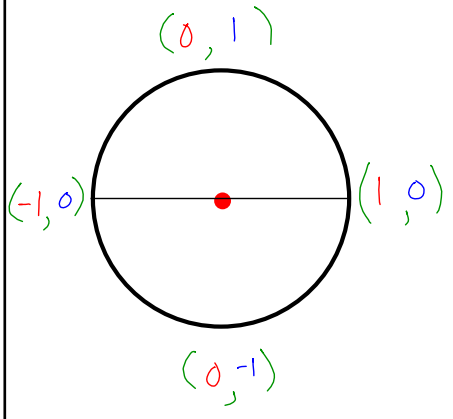


$\tan(90°) =$

$\tan(\frac{\pi}{2}) =$

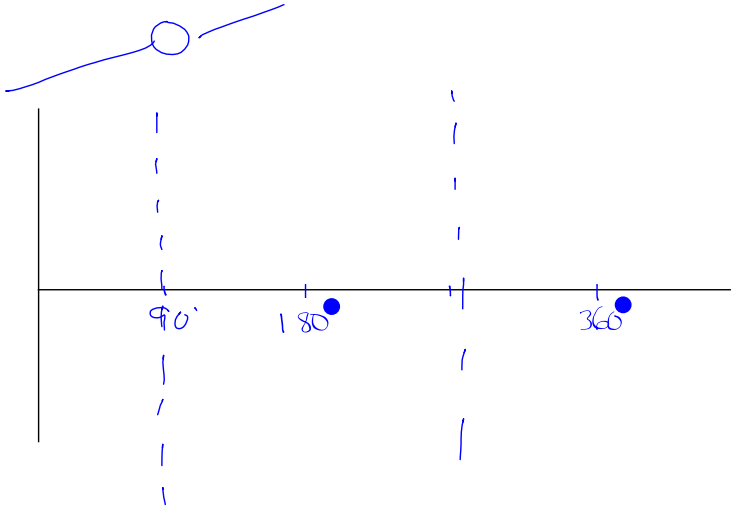
$\tan(0°) = 0$

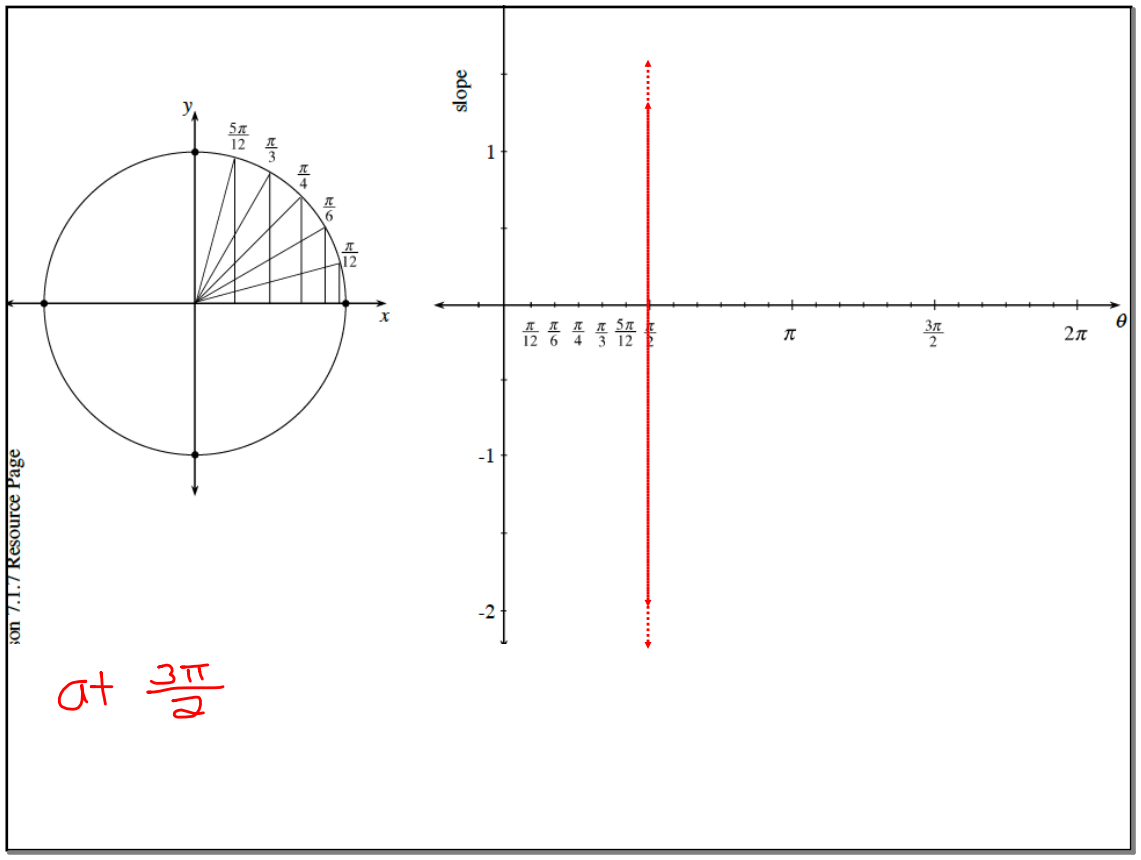
at 0 at $\frac{\pi}{2}$



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

$\tan(\ ) = \frac{\sin(\ )}{\cos(\ )}$





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

on GDC tan(x)

degrees first $0° < \theta < 360°$

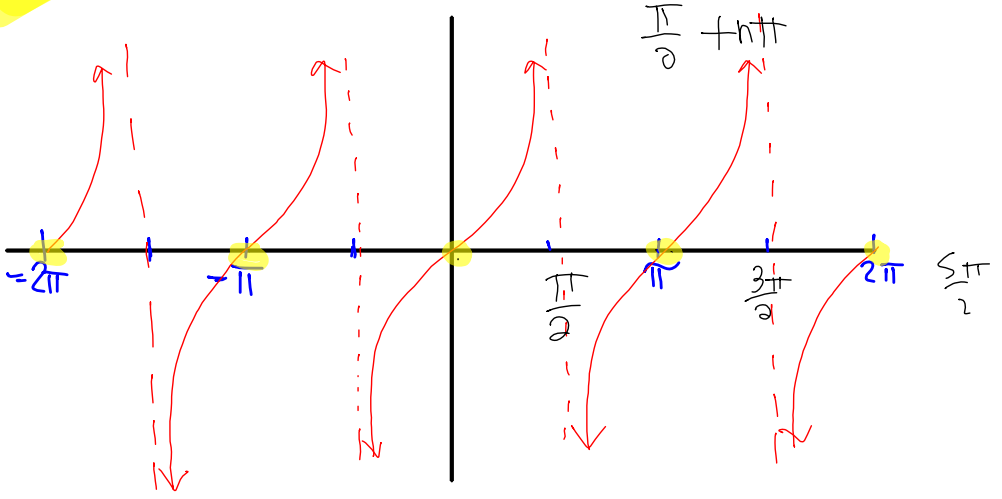
- Zoom TRIG

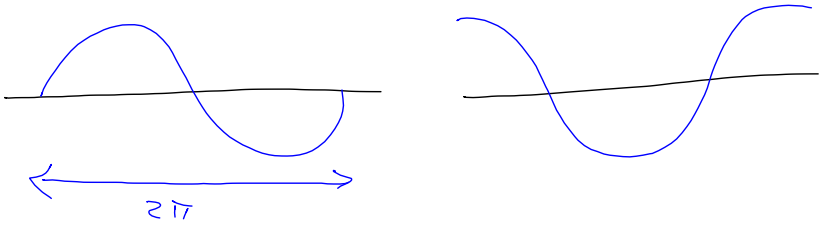
now radians $0 < \theta < 2\pi$

- ZOOM TRIG

Notes:

$f(x) = \tan\theta$ $n \cdot \frac{\pi}{2}$





radians

$-\infty < \theta < \infty$, $\theta \neq \frac{\pi}{2} + n\pi$ Domain

degrees

$-\infty < \theta < \infty$, $\theta \neq 90^\circ + 180^\circ n$

$-\infty < \tan(\theta) < \infty$ Range Same

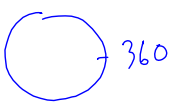
$\theta = n\pi$ θ-intercepts $\theta = 180^\circ n$

$Per = \pi$ Period: $Per = 180$

180° rotational Symmetry

Pick up the Warm Up

① 225°



$\frac{360^\circ}{2\pi}$ or $\frac{2\pi}{360}$

$225^\circ \cdot \frac{2\pi}{360^\circ}$

≈ 3.927 radians

② 138.6°

$138.6^\circ \cdot \frac{2\pi}{360} \approx 2.419$ radians

Convert to following angles to degrees

(3) $\frac{3\pi}{8} \cdot \frac{360^\circ}{2\pi}$

$= 67.5^\circ$

(4) 3 radians

$3 \text{ rad} \cdot \frac{360^\circ}{2\pi}$

$\approx 171.9^\circ$

Assume θ is in quadrant III and you know that $\cos\theta = -\frac{4}{5}$

(5) Find the $\sin\theta$ without using a calculator

$\cos^2\theta + \sin^2\theta = 1^2$

$\left(-\frac{4}{5}\right)^2 + \sin^2\theta = 1$

$\frac{16}{25} + \sin^2\theta = 1$

$\sin^2\theta = \frac{25}{25} - \frac{16}{25}$

$\sin^2\theta = \frac{9}{25}$

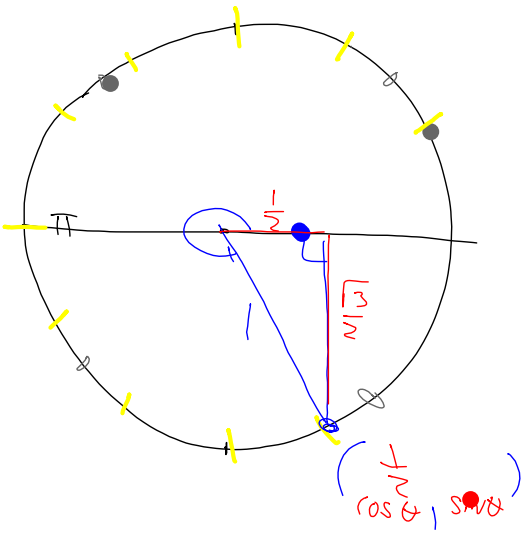
$\sin\theta = \pm\frac{3}{5}$

$\sin\theta = -\frac{3}{5}$

↑ ↑

↓ ↓

↑ ↓ ...ant III

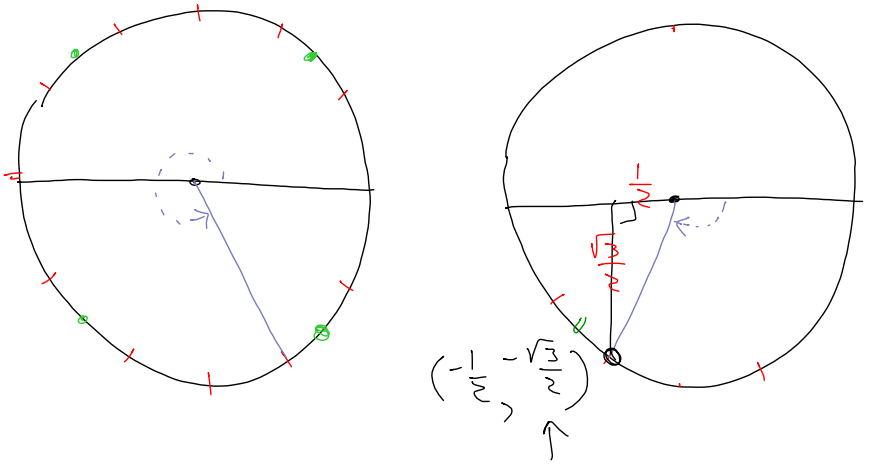


$\cos\left(\frac{10\pi}{6}\right) = \frac{1}{2}$

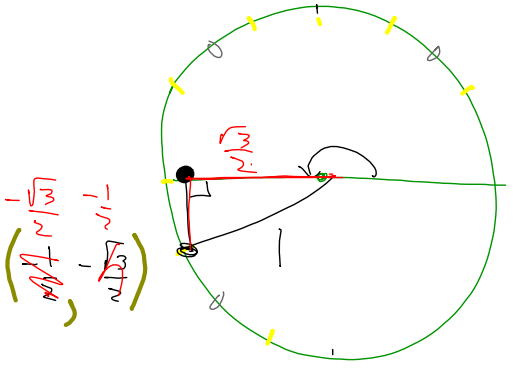
$\frac{\pi}{6}$

(6) Find the exact value of

$\cos\left(\frac{10\pi}{6}\right)$ $\sin\left(-\frac{2\pi}{3}\right) = -\frac{\sqrt{3}}{2}$

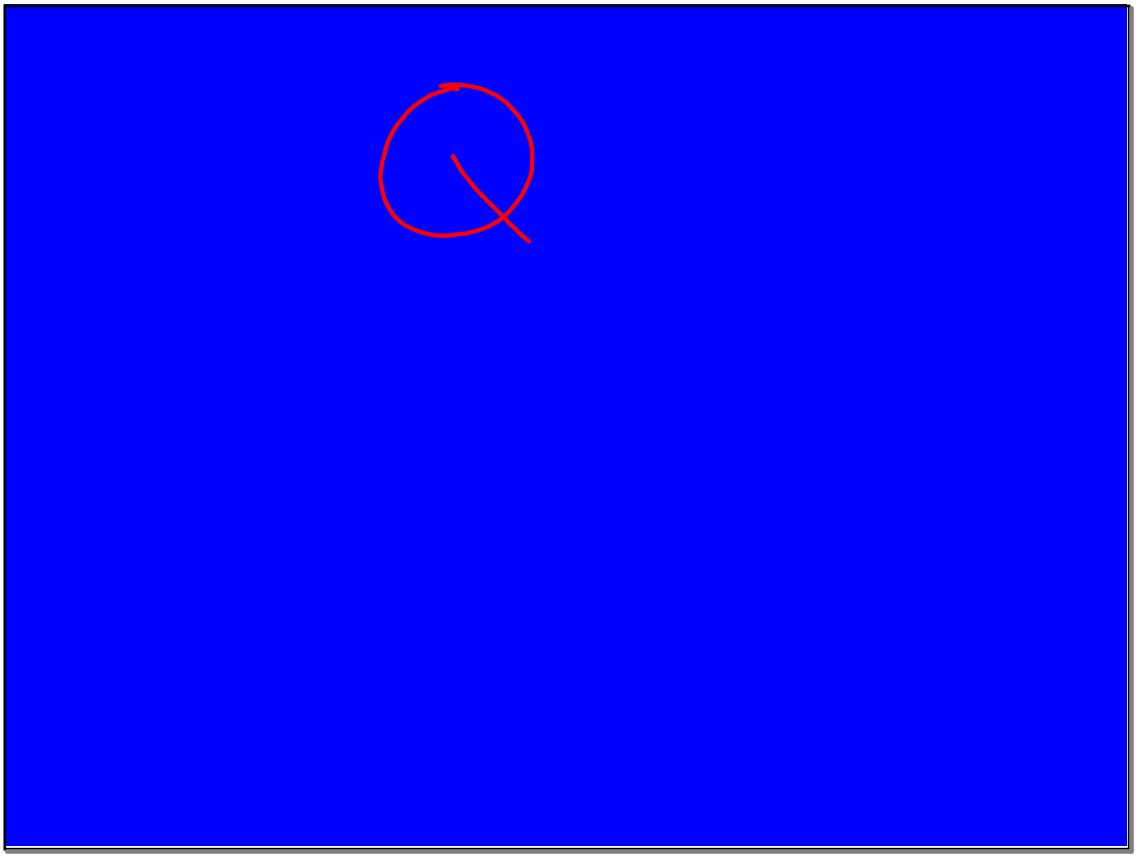


⑦ $\tan\left(\frac{7\pi}{6}\right) = \frac{\sin\left(\frac{7\pi}{6}\right)}{\cos\left(\frac{7\pi}{6}\right)} = \frac{-\frac{1}{2}}{-\frac{\sqrt{3}}{2}}$



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

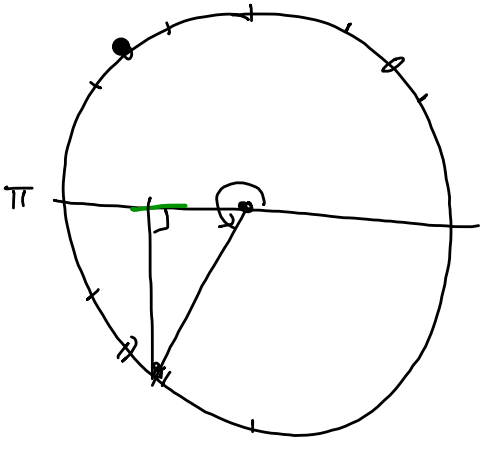
Brain Break



90(a) $\sin(4)$

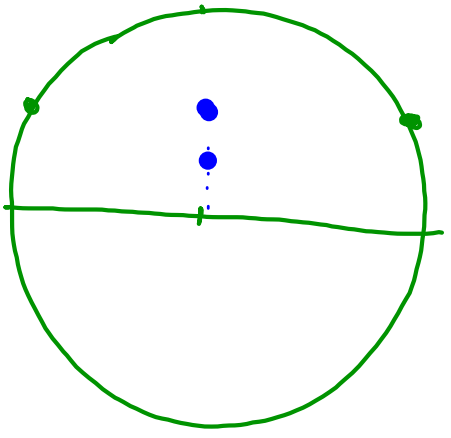
radian mode

(b) $\sin\left(\frac{4\pi}{3}\right)$



91 $\sin\theta = 0.5$

degrees radians

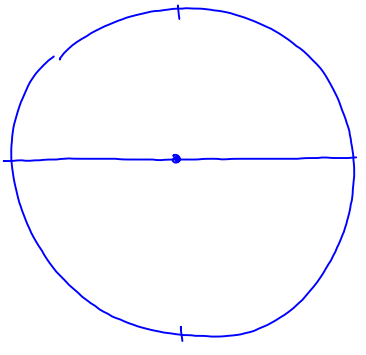


2

93 6 radians

$2\pi \approx$

(a) Approx. how many degrees



(b) Estimate

$\sin(6)$

25

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

(c) $\log(0)$

95

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

t ← # years

r ← annual interest rate

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

(compounded annually)

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

2

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

96

Angle A

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

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

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

$$\cos^2 A + \frac{9}{100} = \frac{100}{100}$$

25

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

$x = \log_7(y)$

$7^x = y$

$y = 7^x$

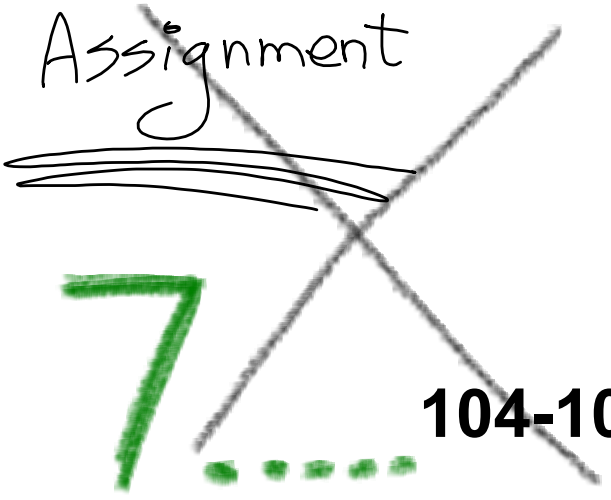
97b $f(x) = \log_7(x)$

$x = \log_7(y)$

$7^x = y$

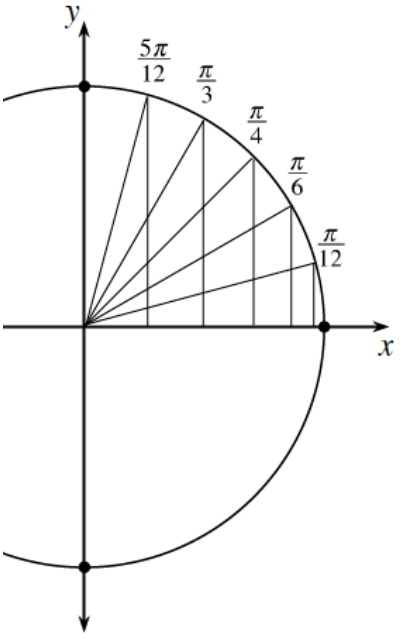
$y = 7^x$

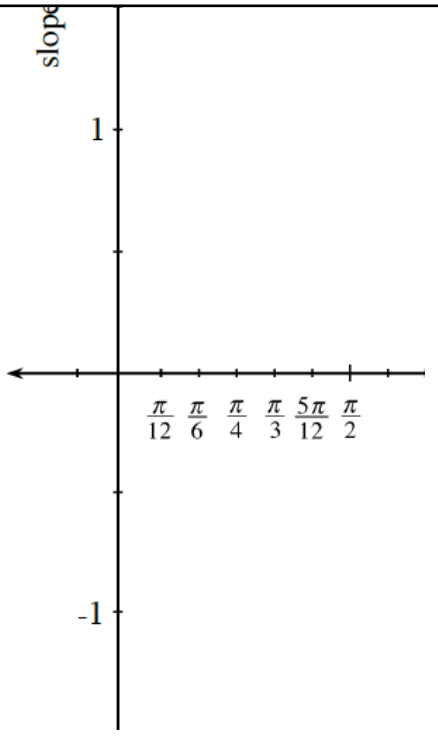
Assignment
Worksheet 7.1.7



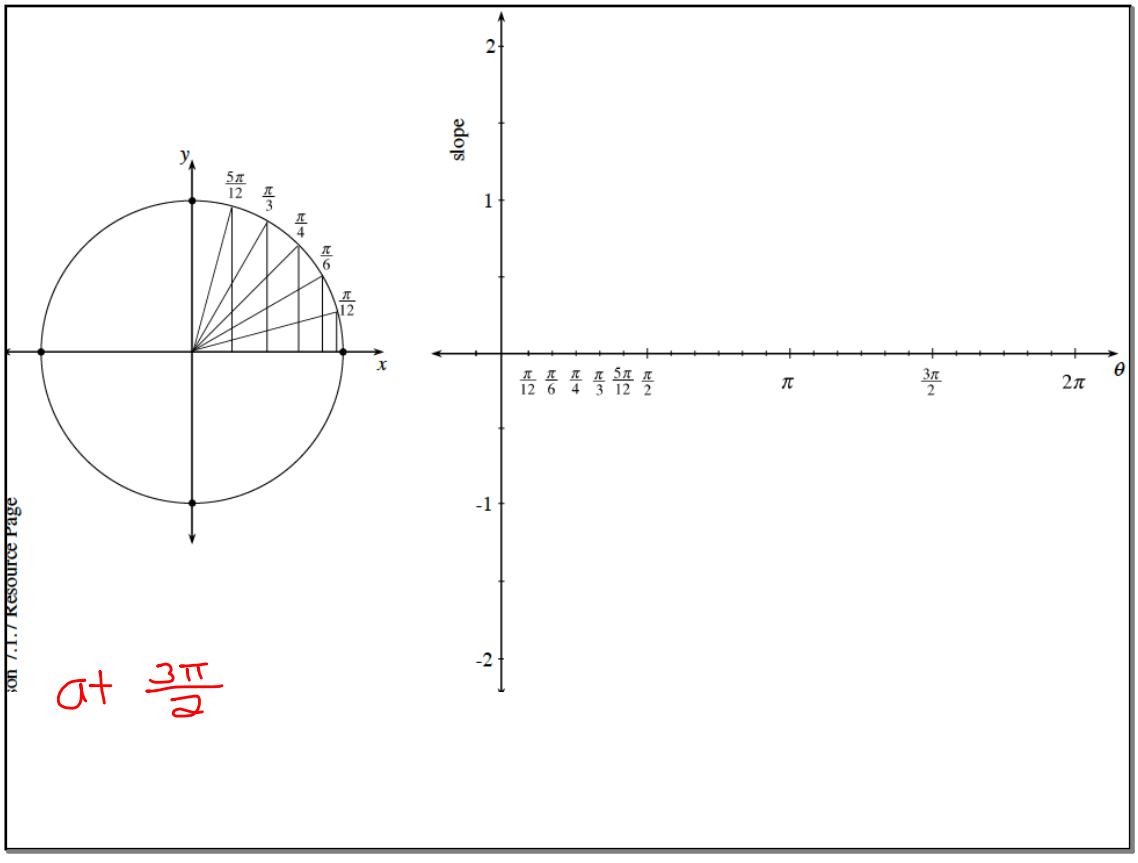
Aim Today: Get to know the Tangent Function ← NOTES

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

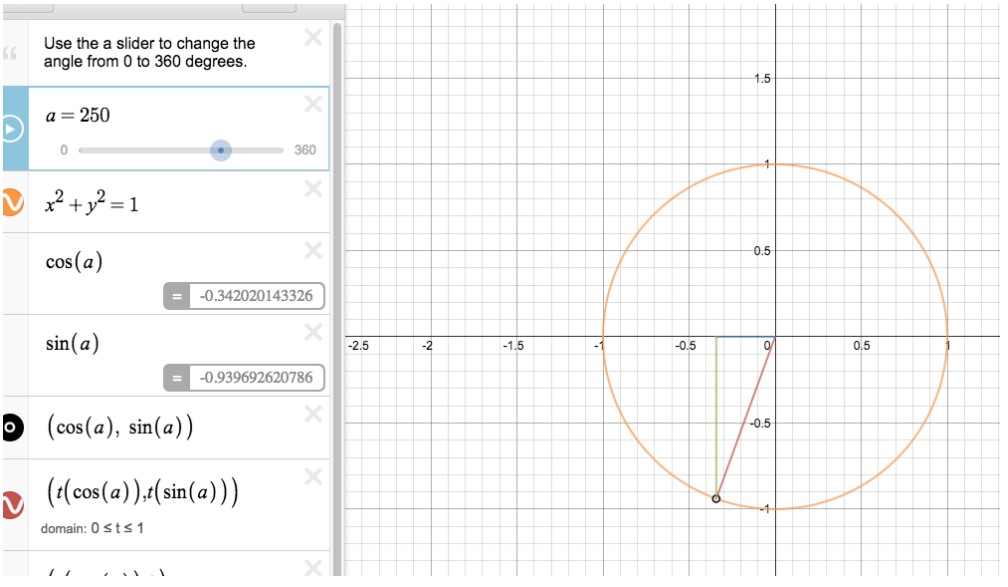




at 0 at $\frac{\pi}{2}$



https://www.desmos.com/calculator/0uyr4ywrvt



on GDC

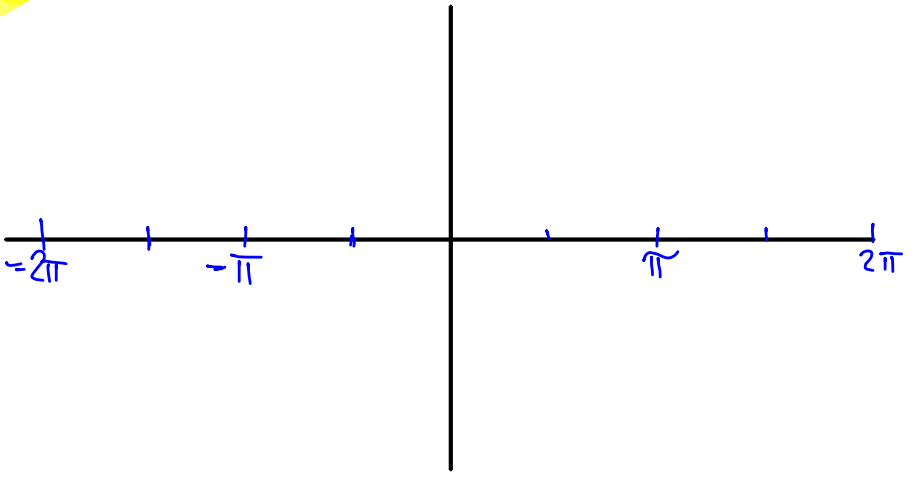
- degrees first $0° < \theta < 360°$
- Zoom TRIG

now radians $0 < \theta < 2\pi$

Zoom TRIG

Notes:

$f(x) = \tan\theta$



Domain

Range

θ-intercepts

Symmetry

Period: π

Assignment

7. . . . . **104-107 , 109-110**