

Math 112

Q15

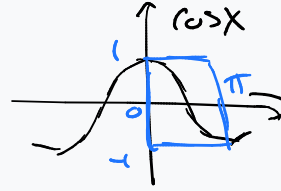
10.6 #9

State the domain and range of each of the following functions:
 (Enter your answers as inequalities. Your domains should be inequalities in x and ranges, in y . As always, type π for π . If you wish to enter ∞ , type *infinity*.)

(a) $f(x) = \arccos(x)$ has

Domain: $[-1, 1]$

Range: $[0, \pi]$



(b) $g(x) = \arcsin(x)$ has

Domain:

Range:

(c) $h(x) = \arctan(x)$ has

Domain:

Range:

10.7
ex

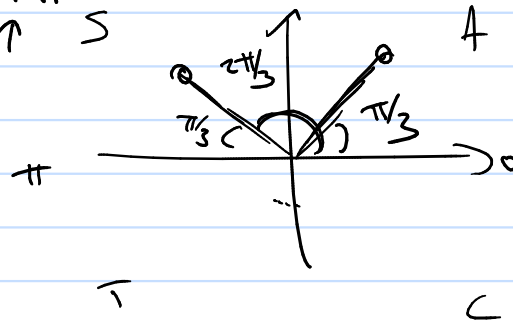
$$\sin(-2x) = \sqrt{3}/2$$

$$\underline{-2x = \pi/3 + 2n\pi} \quad \text{or} \quad \underline{-2x = 2\pi/3 + 2n\pi}$$

$$x = \underline{-\pi/6 + n\pi}$$

$$x = \underline{-\pi/3 + n\pi} \quad \uparrow \quad S$$

\arcsin	$\sin(\)$
0	0
$\pi/6$	$1/2$
$\pi/4$	$\sqrt{2}/2$
$\pi/3$	$\sqrt{3}/2$
$\pi/2$	1



$$\sin(2x) = \sqrt{3}/2$$

$$x = -\pi/6 + n\pi$$

$$x = \underline{\pi/3 + n\pi}$$

Not on exam Trig Inequalities

(1) Set one side to zero

(2) Make one fraction

(3) Domain? zeros of numerator? zeros of denom?

(4) Sign table

(ex) $2 \tan x \sin x \geq \tan x$

(#1) $2 \tan x \sin x - \tan x \geq 0$

$$2 \frac{\sin x \sin x}{\cos x} - \frac{\sin x}{\cos x} \geq 0$$

$$\frac{2 \sin x \sin x - \sin x}{\cos x} \geq 0$$

$$\frac{2 \sin x (\sin x - 1)}{\cos x} \geq 0$$

(#2) $\frac{2 \sin(x) (\sin(x) - 1)}{\cos(x)} \geq 0$

S	A
(-)	(-)

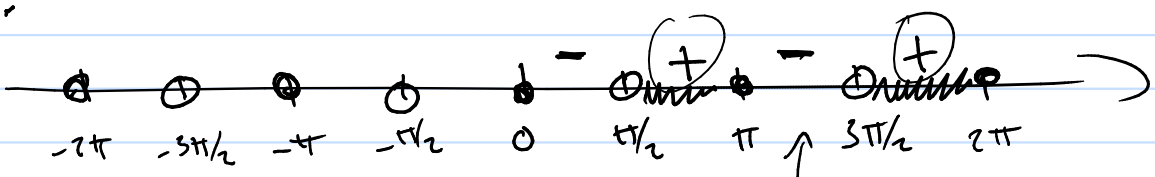
Zeros & denom: $\cos(x) = 0$ $x = \pi/2 + n\pi$

Zeros & numerator: $\sin(x) = 0$ or $\sin(x) = 1$

$$x = 0 + n\pi$$

$$x = \pi/2 + 2n\pi$$

(#3) Sign table



Exam 3

12 probs

just chapter 10

10.1

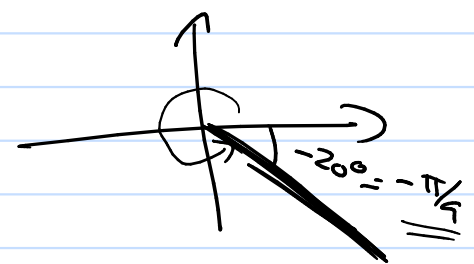
Angles!

1 prob

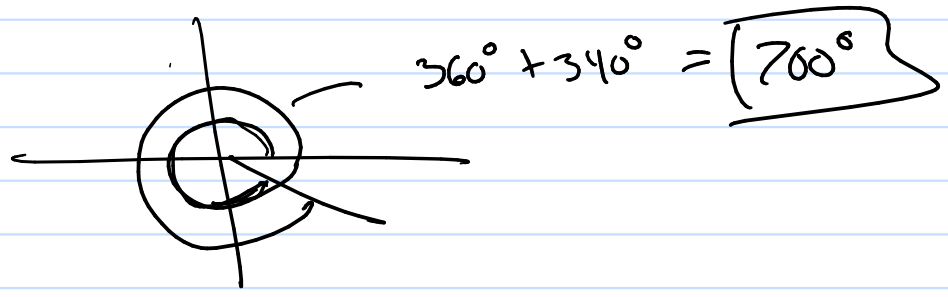
(1) conversions degrees \leftrightarrow radians and plot

(ex) -20° in radians and plot

$$(-20^\circ) \left(\frac{\pi}{180^\circ} \right) = -\frac{\pi}{9}$$



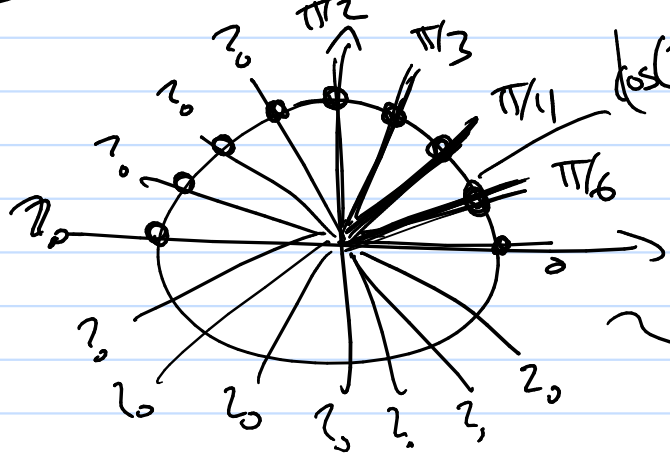
coterminal to -20° in radians = $\boxed{\frac{17}{9}\pi}$



10.2

$\cos \theta$, $\sin \theta$ and unit circle
 $(\cos(\pi/6) = \sqrt{3}/2, \sin(\pi/6) = 1/2)$
 Now draw

(1)



table!

(1) unit circle
 (2) all "known" parts of angles
 $(\cos \theta, \sin \theta)$

(2) given $\sin(\theta)$ and/or $\cos(\theta)$

(ex) $\sin(\theta) = \frac{\sqrt{3}}{2}$ give all angle sol's

10.3/10.4

6 trig functions with identities

4 probs

(1) eval some trig (angle)

(ex) $\tan\left(\frac{13\pi}{2}\right)$

(2) find all angles such that $\text{trig}(\theta) = \text{given value}$

(3) given one $\text{trig}(\text{angle}) = \text{given value}$

→ find the other five.

will have a few probs each.

~~but~~
~~we will~~
~~use identities~~

don't
simplify

ex: $\sin(\theta) = -\frac{7}{12}$

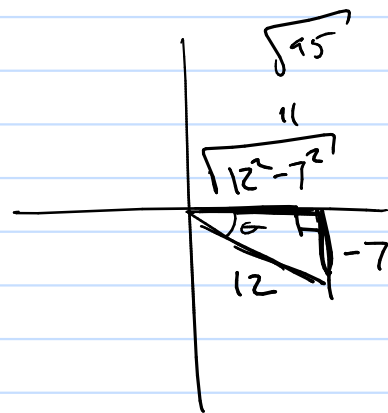
$$\cos \theta = \frac{\sqrt{15}}{12}$$

$$\tan \theta = -\frac{7}{\sqrt{15}}$$

$$\cot \theta = -\frac{\sqrt{15}}{7}$$

$$\sec \theta = \frac{12}{\sqrt{15}}$$

$$\csc \theta = -\frac{12}{7}$$



(4) Simplify using trig identities.

(ex) $\sec^2 x \tan x - \cot x =$ what using only $\sin x, \cos x$.

10.5

2 graphs

(1) $\sin x$ & $\cos x$

(2) $\csc x$ & $\sec x$

10.6

Inverse Trig

2 parts

(1) find exact values of $\arcsin(x)$

(2) find trig ($\arcsin(x)$)

ex $\sin(\arcsin(x))$

10.7

1 trig eqn

↑
polynomial like