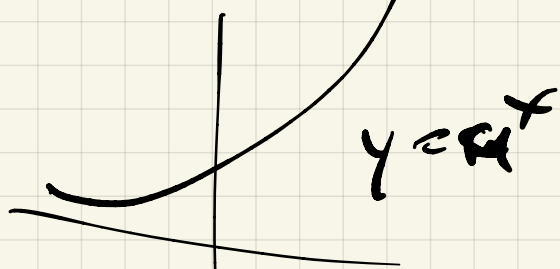


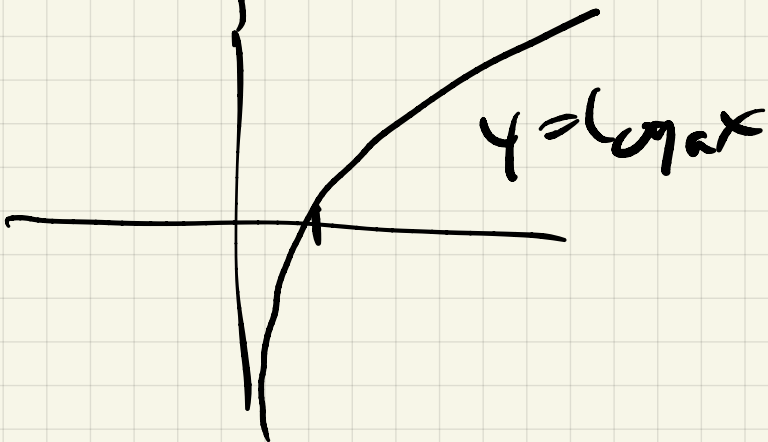
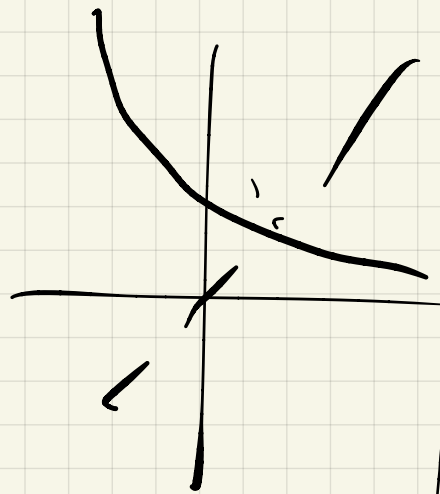
Inverse functions

Last time: exponential function

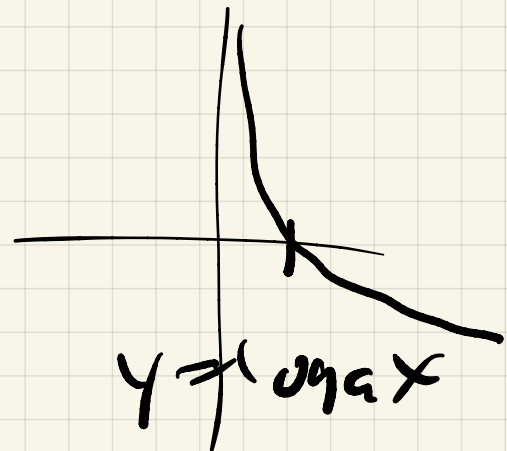
$$f(x) = a^x$$



$$y = a^x$$



$$y = \log_a x$$

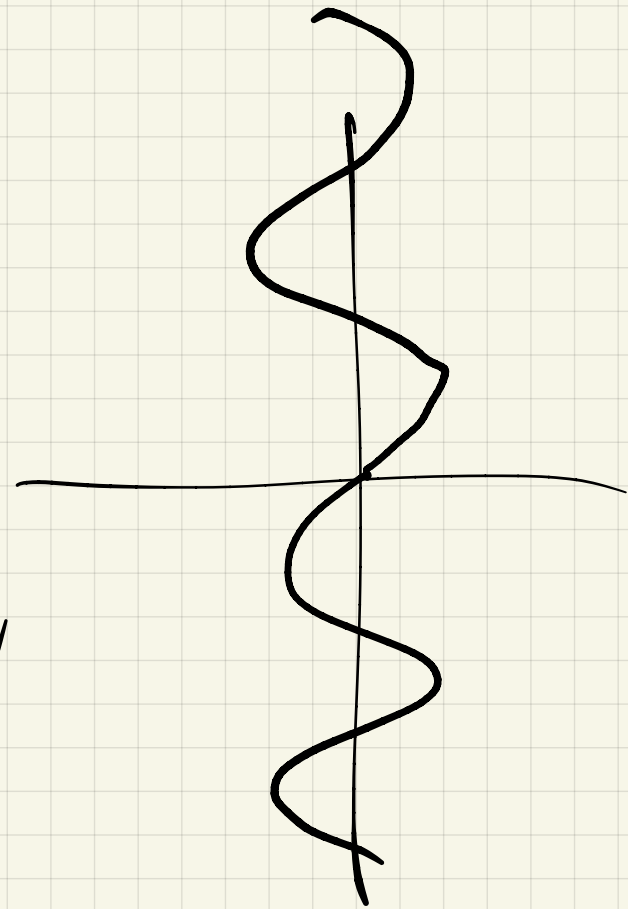
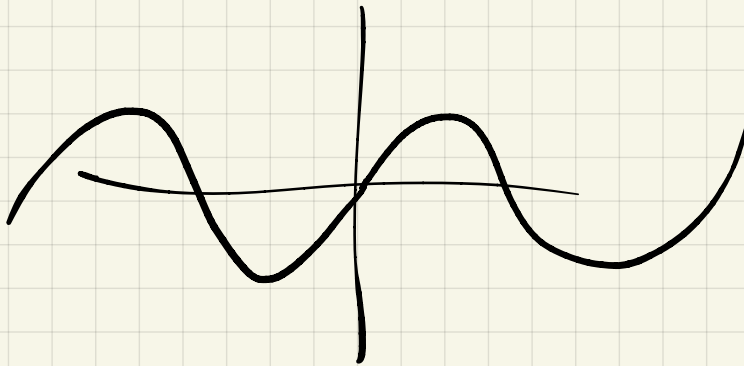


$$y = \log_a x$$

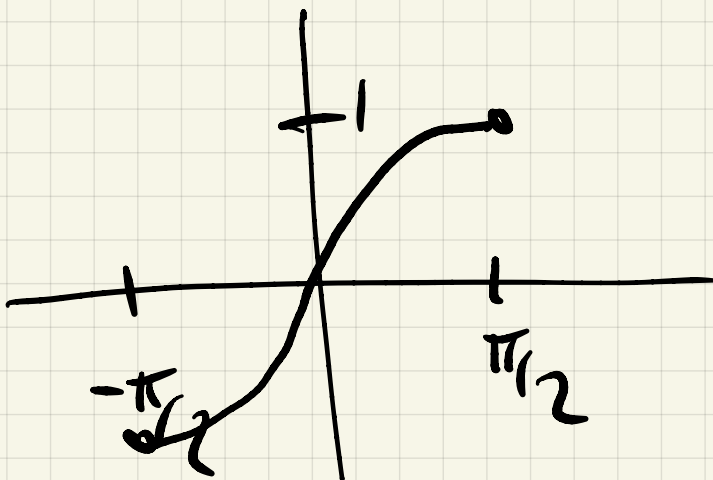
$$f(x) = e^x$$

$$\log_e x = \ln x$$

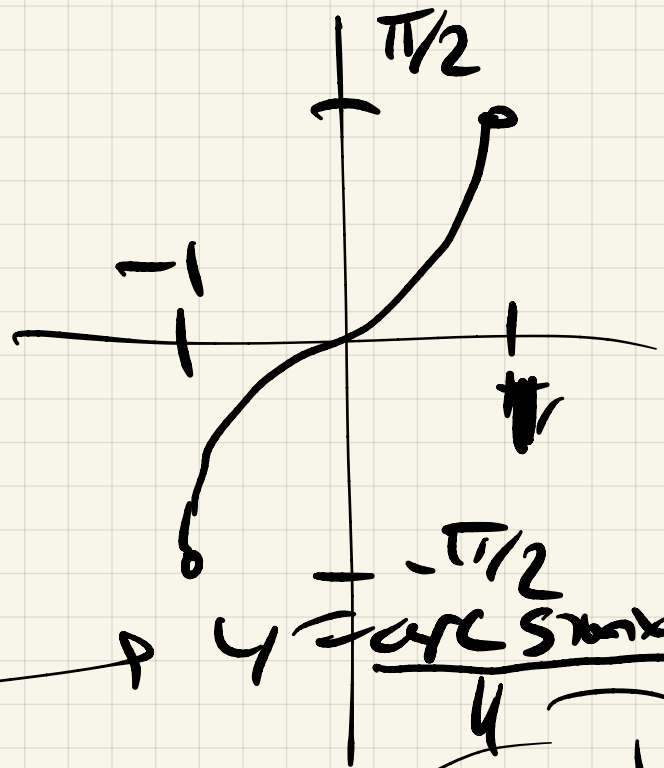
Trig functions



Correct This



$$y = \sin x$$



$$y = \frac{\arcsin x}{x}$$

In class

Calculate \rightarrow

$$\sin^{-1} x$$

$y = \arcsin x = \text{angle } \theta \text{ so}$
that $\sin \theta = x$

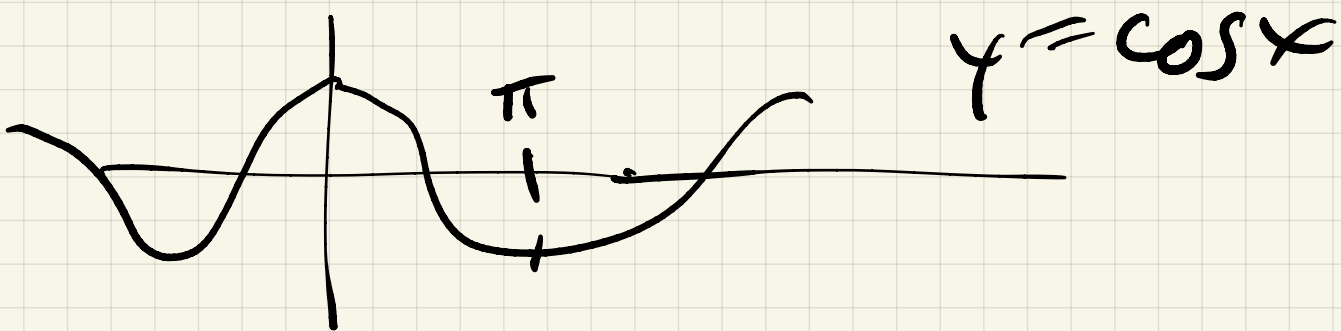
Ex $\arcsin \frac{1}{2} = \frac{\pi}{6}$

$$\arcsin \frac{1}{\sqrt{2}} = \frac{\pi}{4}$$

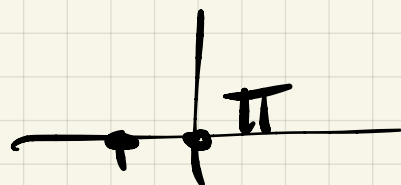
$$\arcsin \sqrt{\frac{\sqrt{2}+1}{2\sqrt{2}}} = \frac{3\pi}{8}$$

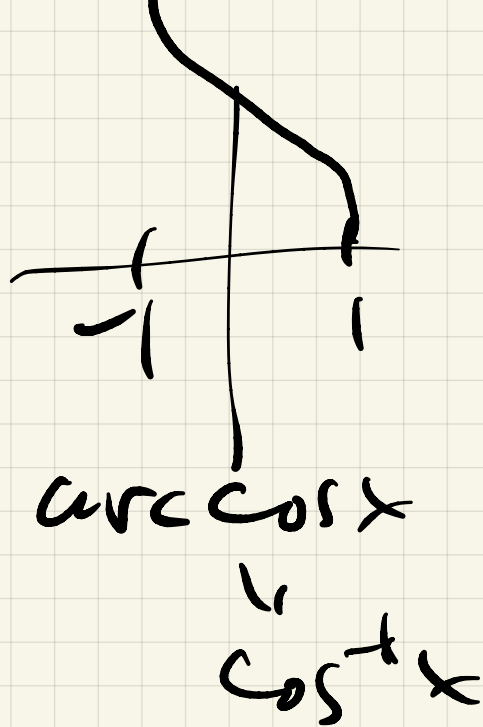
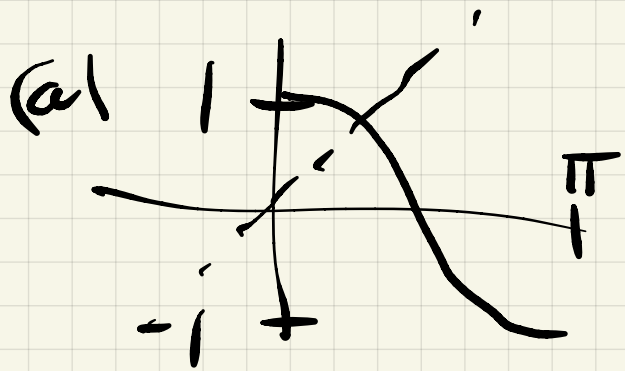
(h/c in class $\sin \frac{3\pi}{8} = \sqrt{\frac{\sqrt{2}+1}{2\sqrt{2}}}$)

The remaining inverse trig are similar

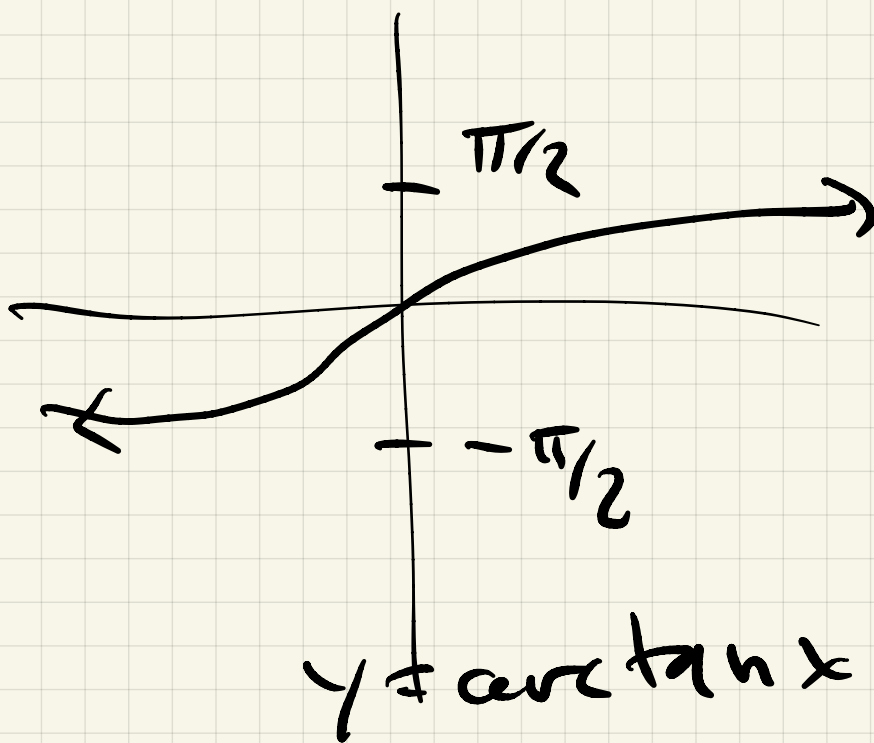
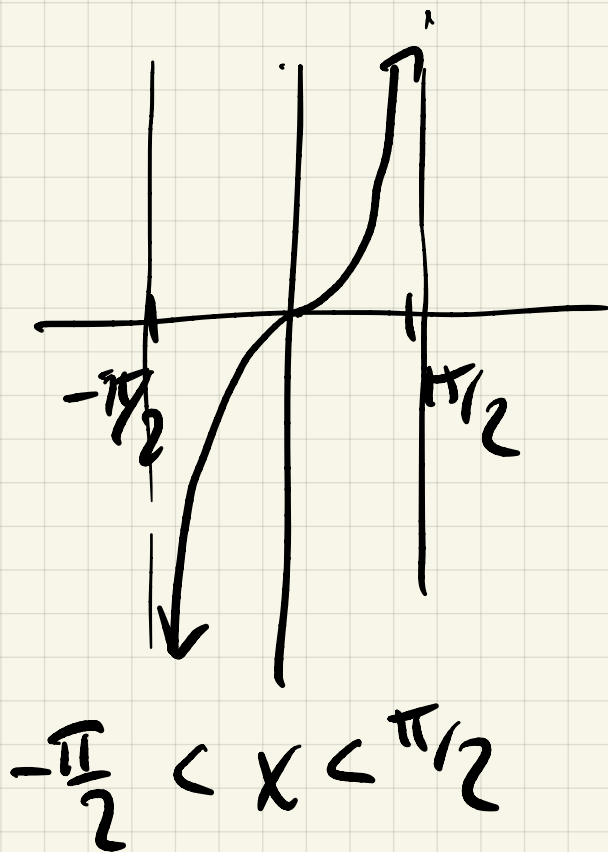


$$y = \cos x$$
$$0 \leq x \leq \pi$$

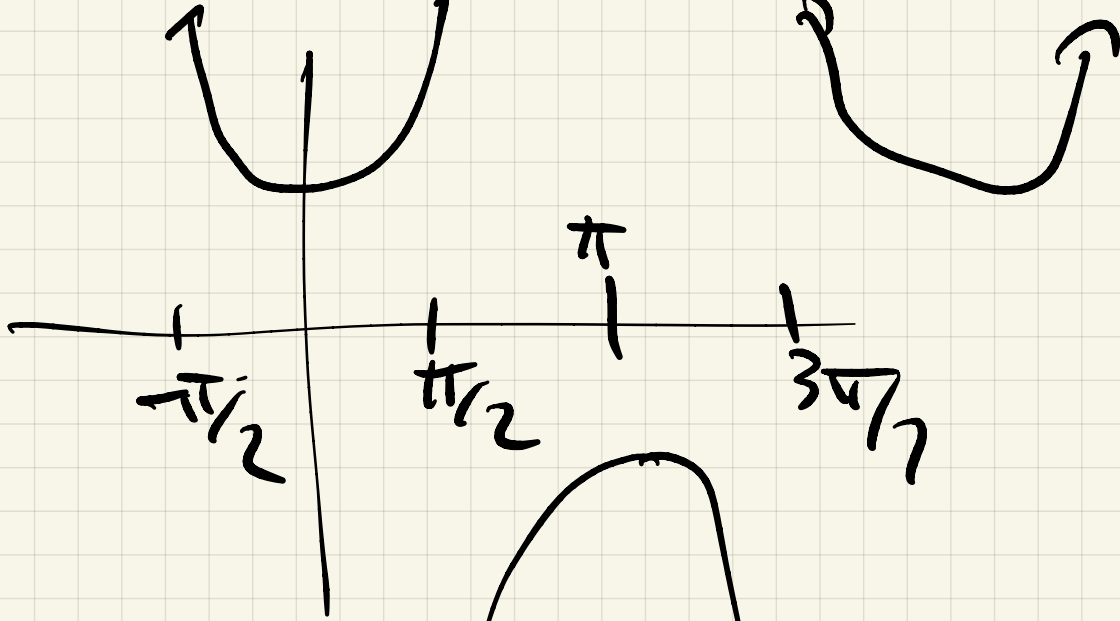




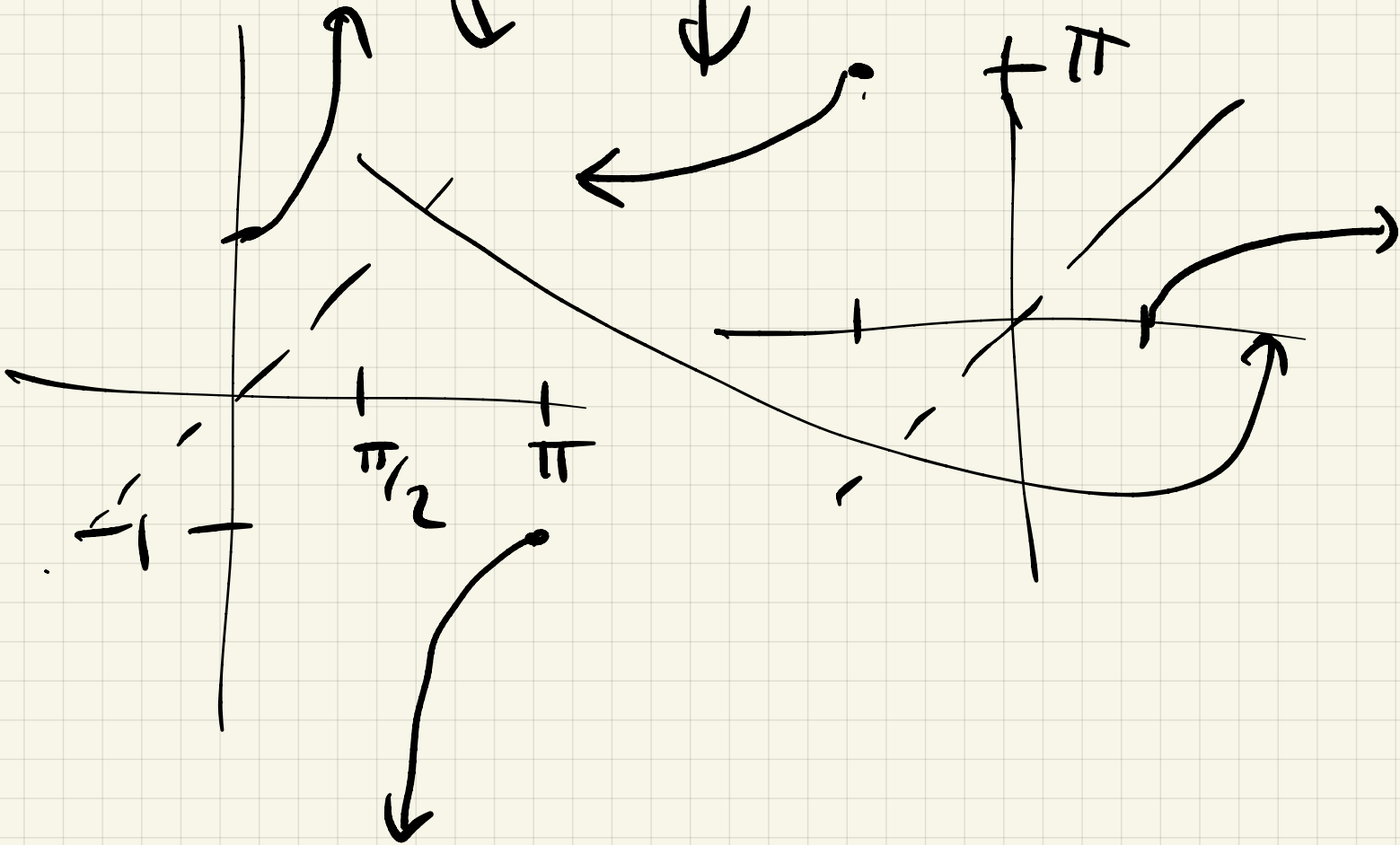
(b) $y = \tan x$



(c) $y = \sec x$



rules:



$$0 \leq x \leq \pi$$

Note Calculator

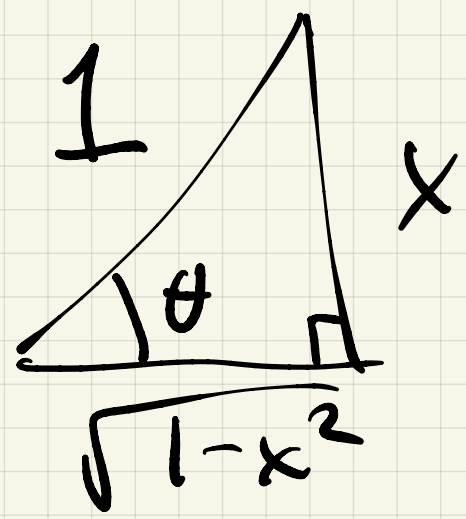
$$\text{arc sec } x = \boxed{\text{arc cos } \frac{1}{x}}$$

Don't need calculator button

Ex Draw right triangle to evaluate

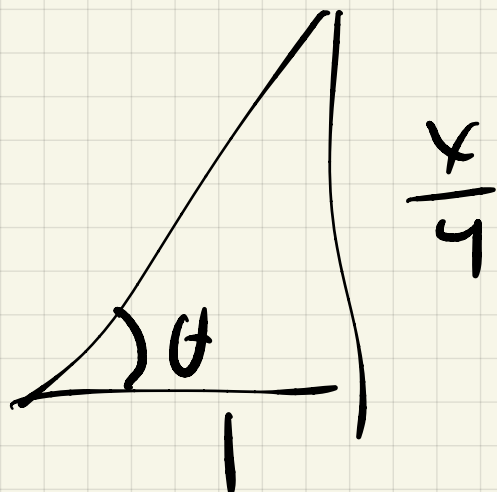
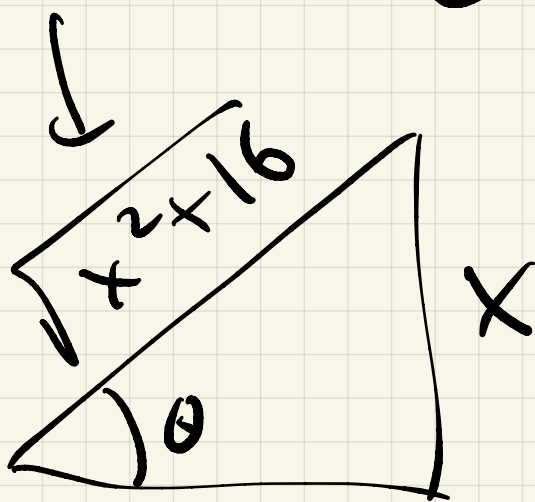
(a) $\tan(\text{arcsin } x)$

$\left[\begin{array}{l} \sin(\text{arcsin } x) = x \text{ (easy)} \\ \theta \end{array} \right]$



$$\tan \theta = \frac{\text{opp}}{\text{adj}} = \frac{x}{\sqrt{1-x^2}}$$

(b) $\cos(\arctan \frac{x}{4})$ ←



$$\cos \theta = \frac{\text{adj}}{\text{hyp}} = \frac{4}{\sqrt{x^2 + 16}}$$

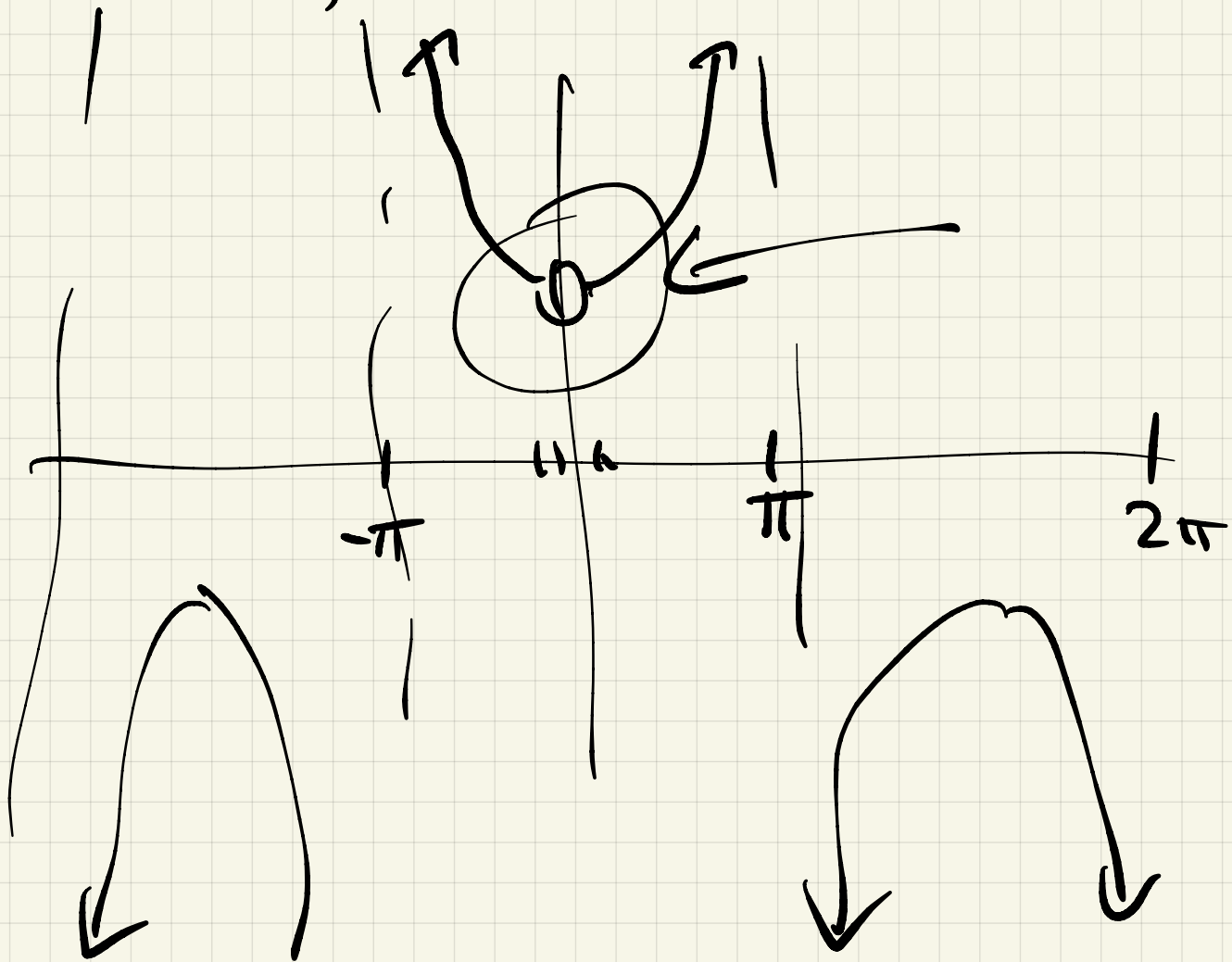
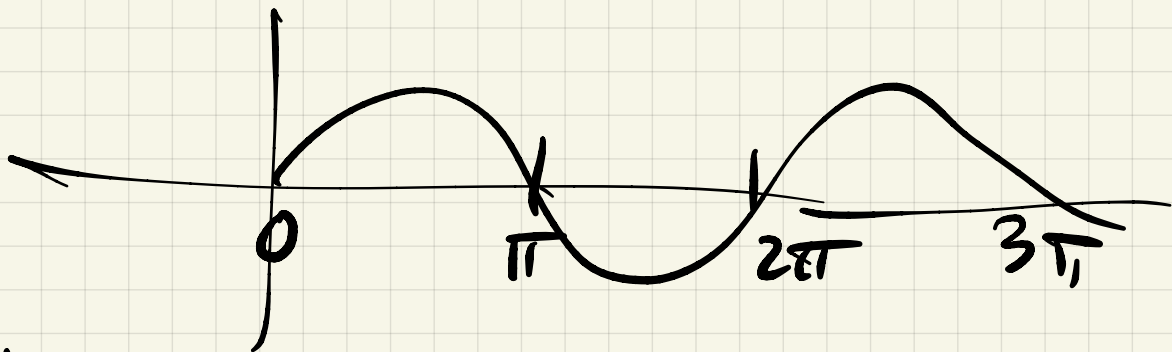
Skip 2.1

§ 2.2 Limits

Ex) What happens to
value of $f(x) = \frac{x}{\sin x}$
for x near 0??

$$f(0) = \frac{0}{0} = \text{undefined}$$

$$\text{Dom } f = \{x : x \neq 0, \pm\pi, \pm 2\pi, \dots\}$$



Can see γ -value with data

numerical data

x	y
± 1	1.88
$\pm .5$	1.043
$\pm .1$	1.00166 — —
$\pm .01$	1.00001666 —
$\pm .001$	1.0000001666 —