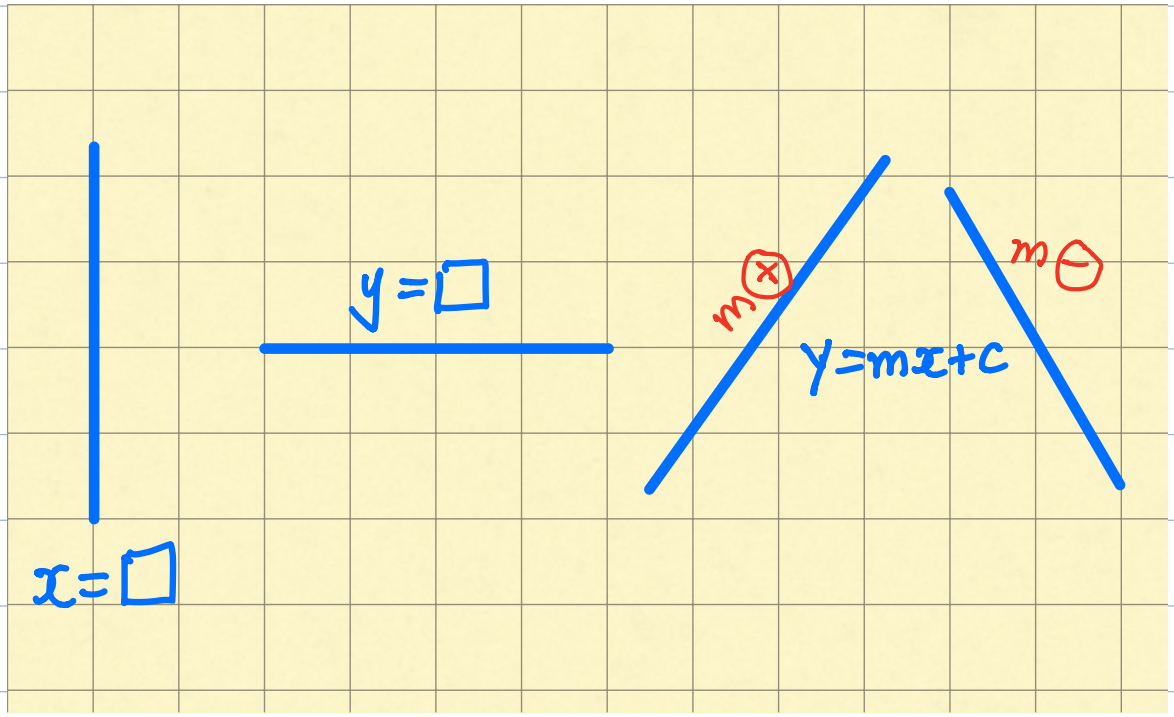
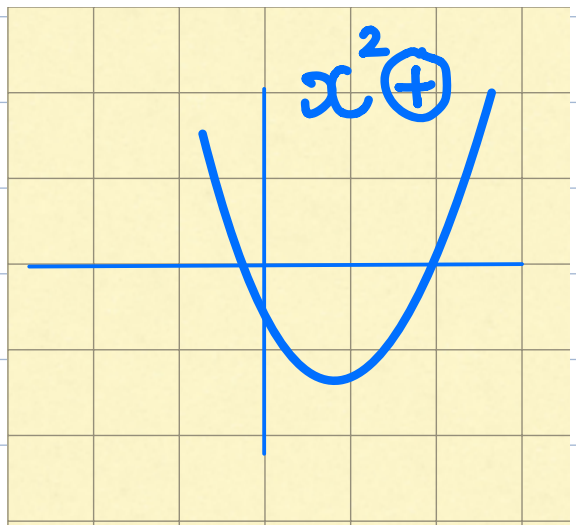
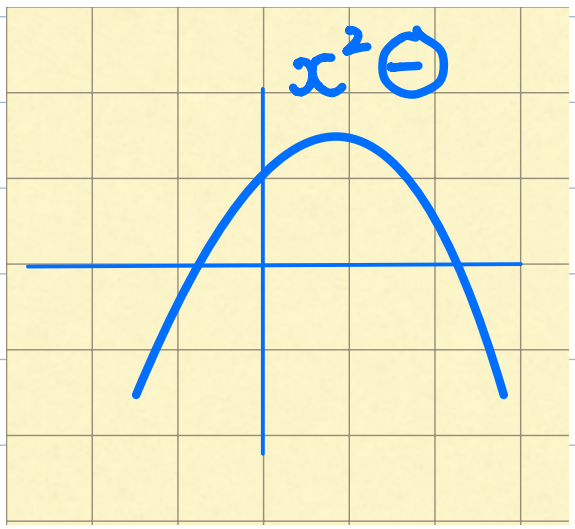
LINEAR

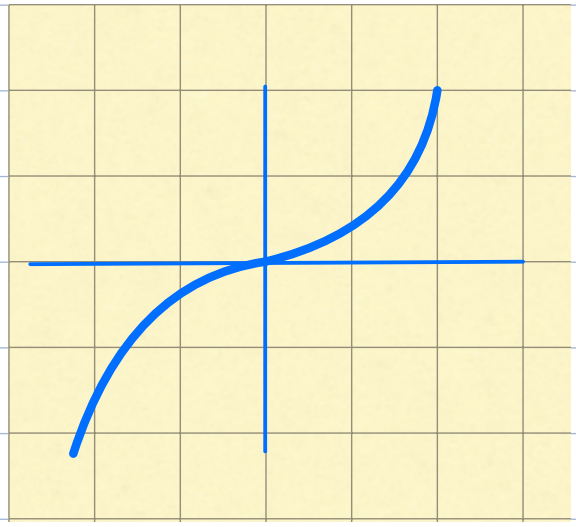


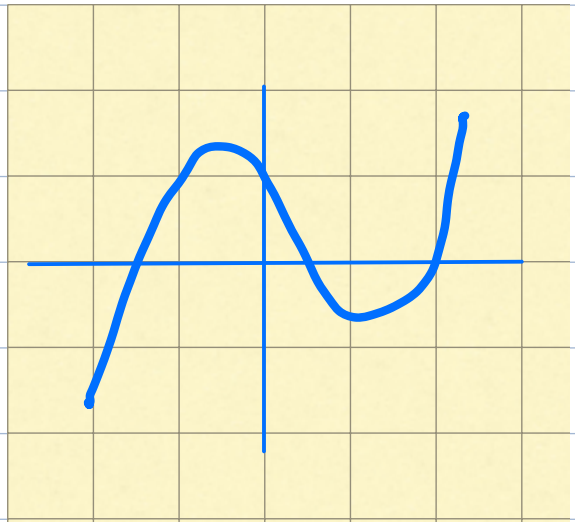
QUADRATIC



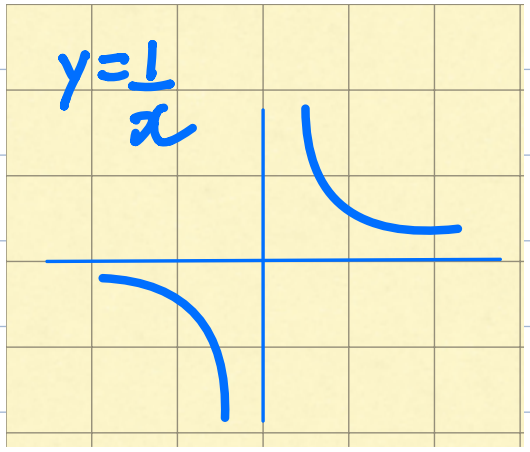


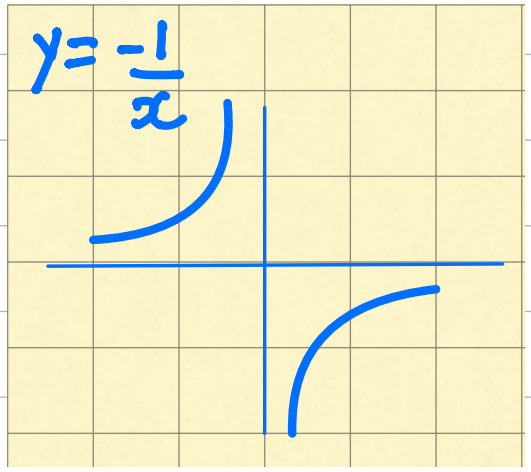
CUBIC

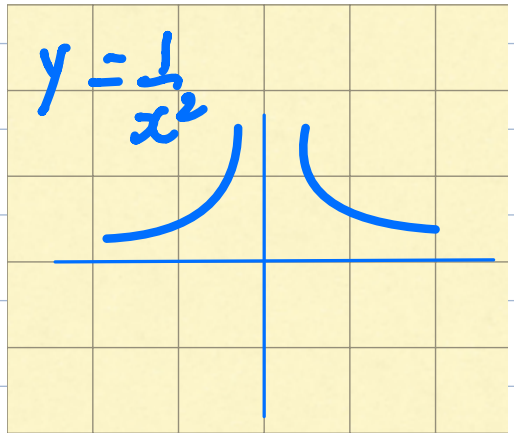


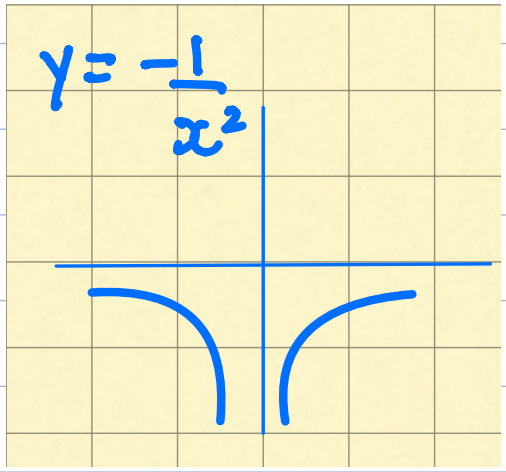


RECIPROCAL

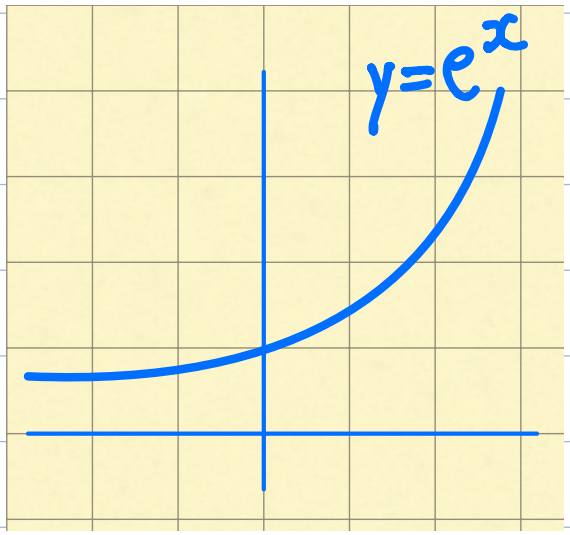


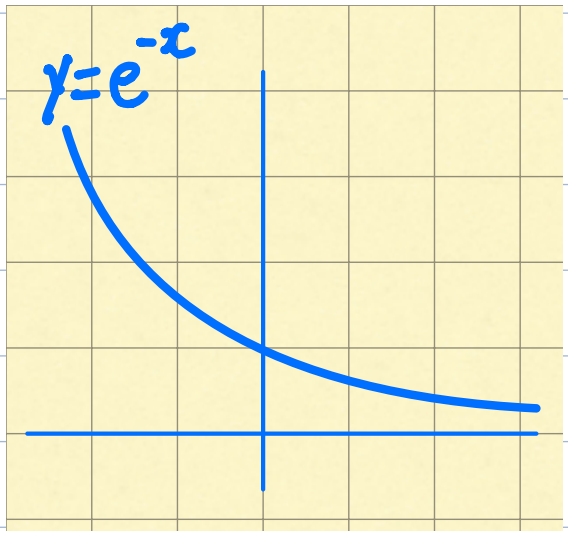






EXPONENTIAL $y = \square^{x}$

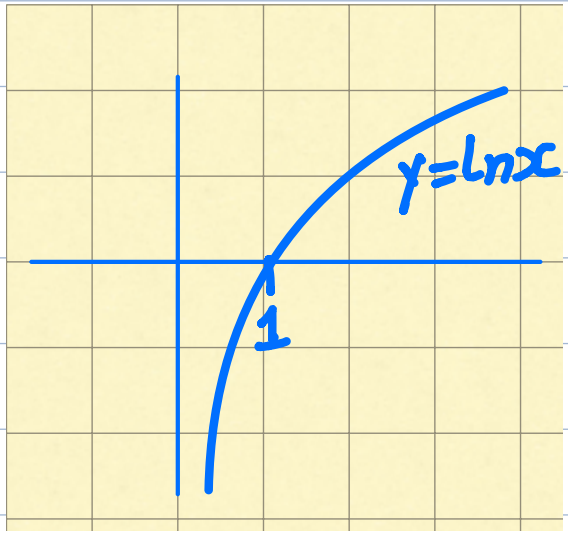




IMP: y - intercep: $y = e^{x}$ $x=0, y=e^{0}=1$

$y = 2e^{x} = 2e^{0} = 2$

LOG



$y = \ln x$

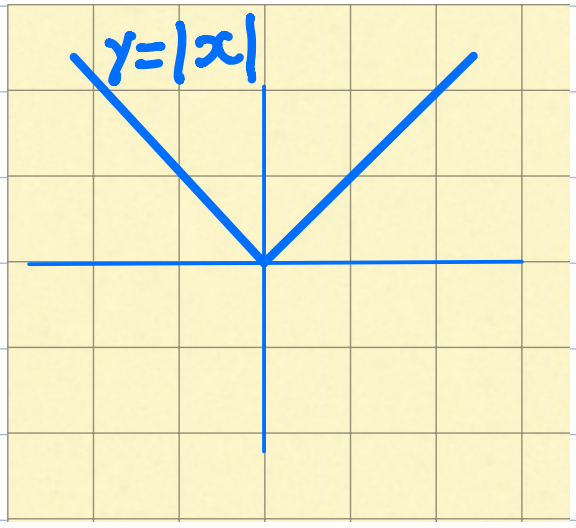
x-int $y=0$

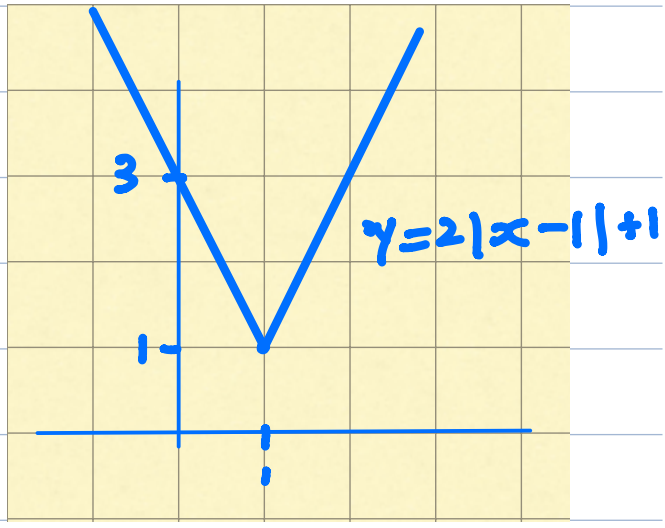
$0 = \ln x$

$x = e^{0} = 1$

ABSOLUTE

$y = |x|$





$y = a|x-b|+c$

Turning point $x-b=0$, $y=c$

$x=b$

y-intercept: $x=0$ and Solve

$y = 2|x-1|+1$

TP $x-1=0$, $y=1$

$x=1$

$(1,1)$

y-int $x=0$

$y = 2|0-1|+1$

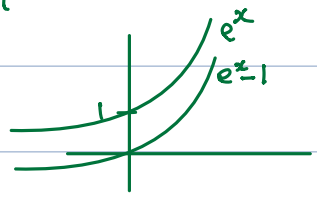
$2|-1|+1$

$2(1)+1$

$y=3$

MAIN VARIATIONS

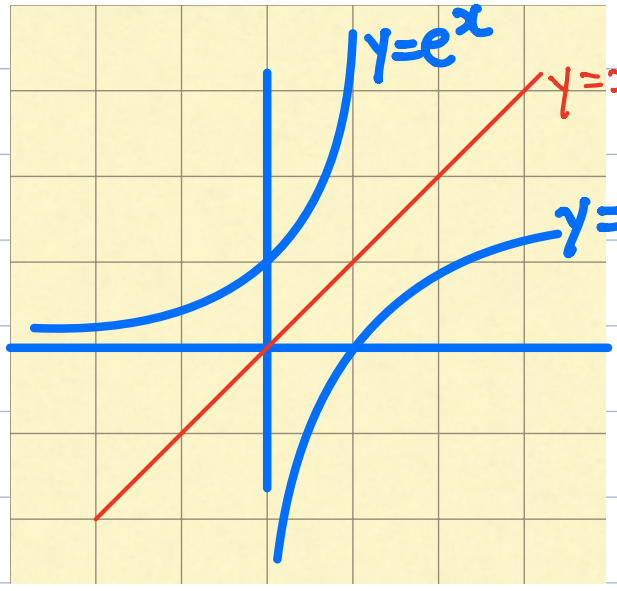
$y = e^x - 1$



$f(x)$

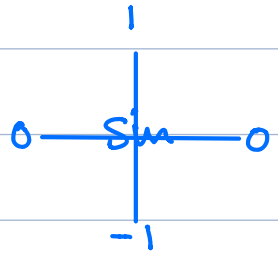
$-f(x)$	Reflect in x axis.
$f(-x)$	Reflect in y axis
$f(x)+a$	Shifts up
$f(x)-a$	Shift down

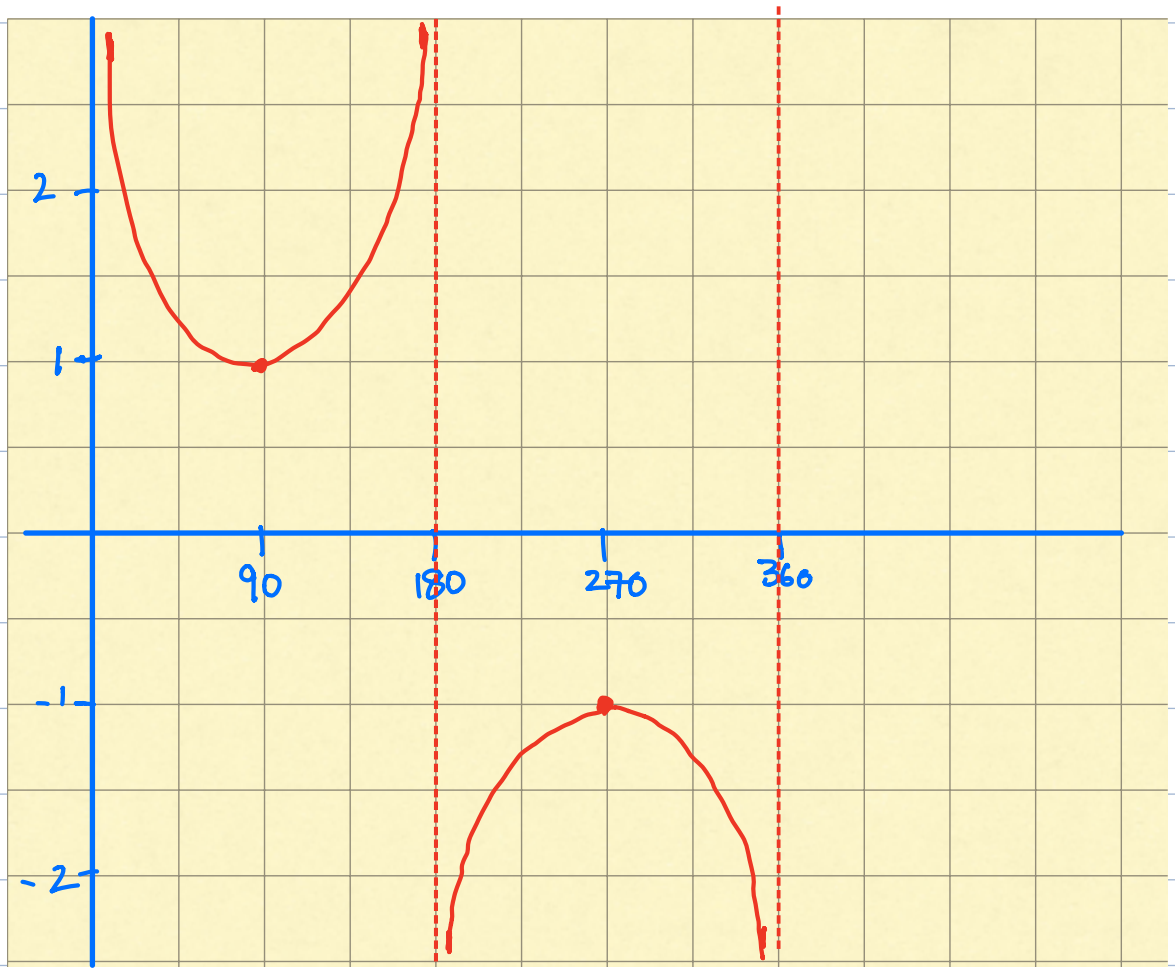
Inverse functions: Reflection of each other in line $y=x$



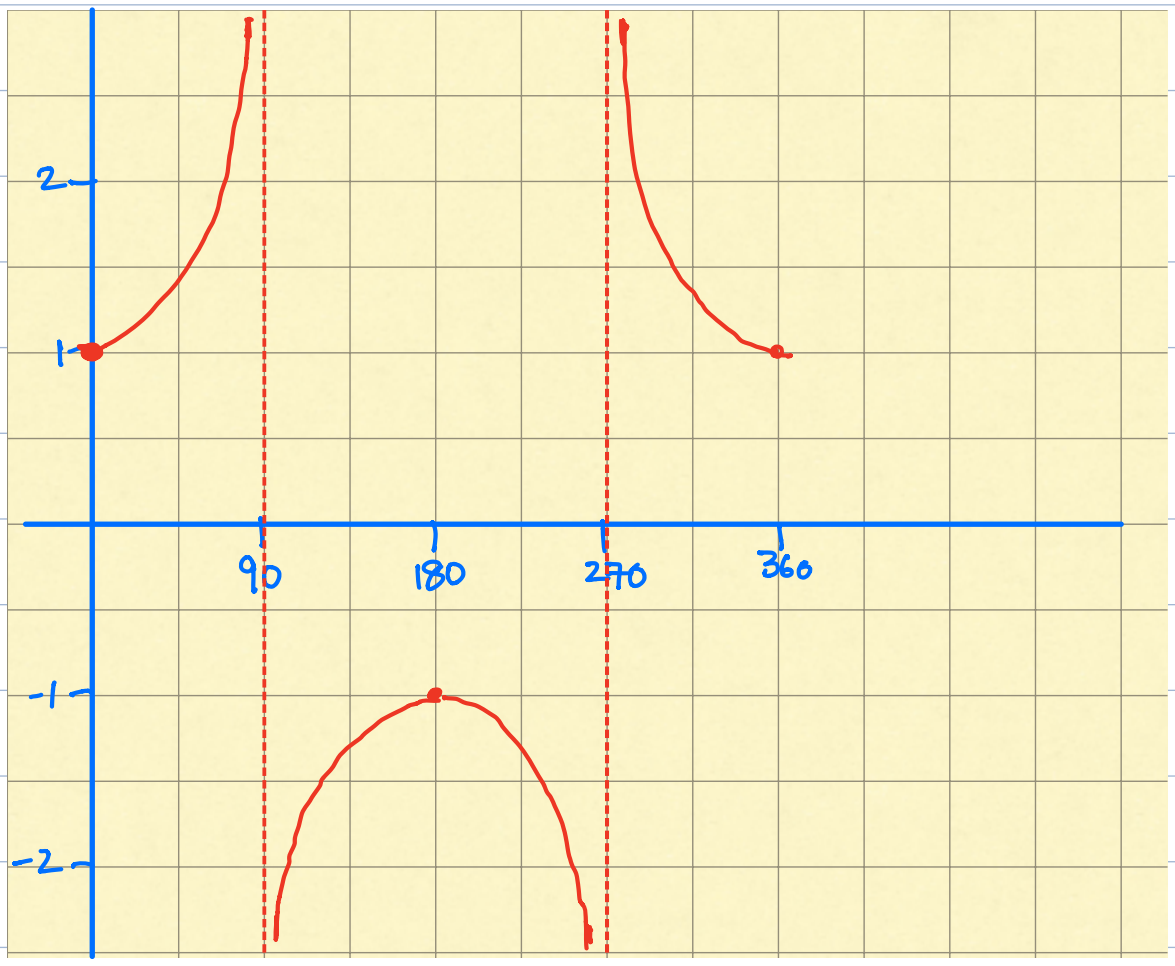
TRIG GRAPHS

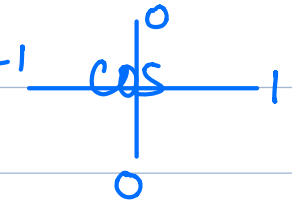
$$y = \text{cosec}\, x = \frac{1}{\sin x}$$



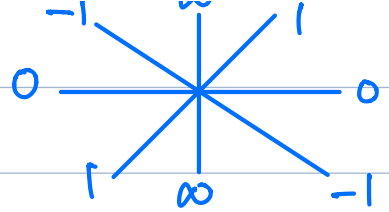


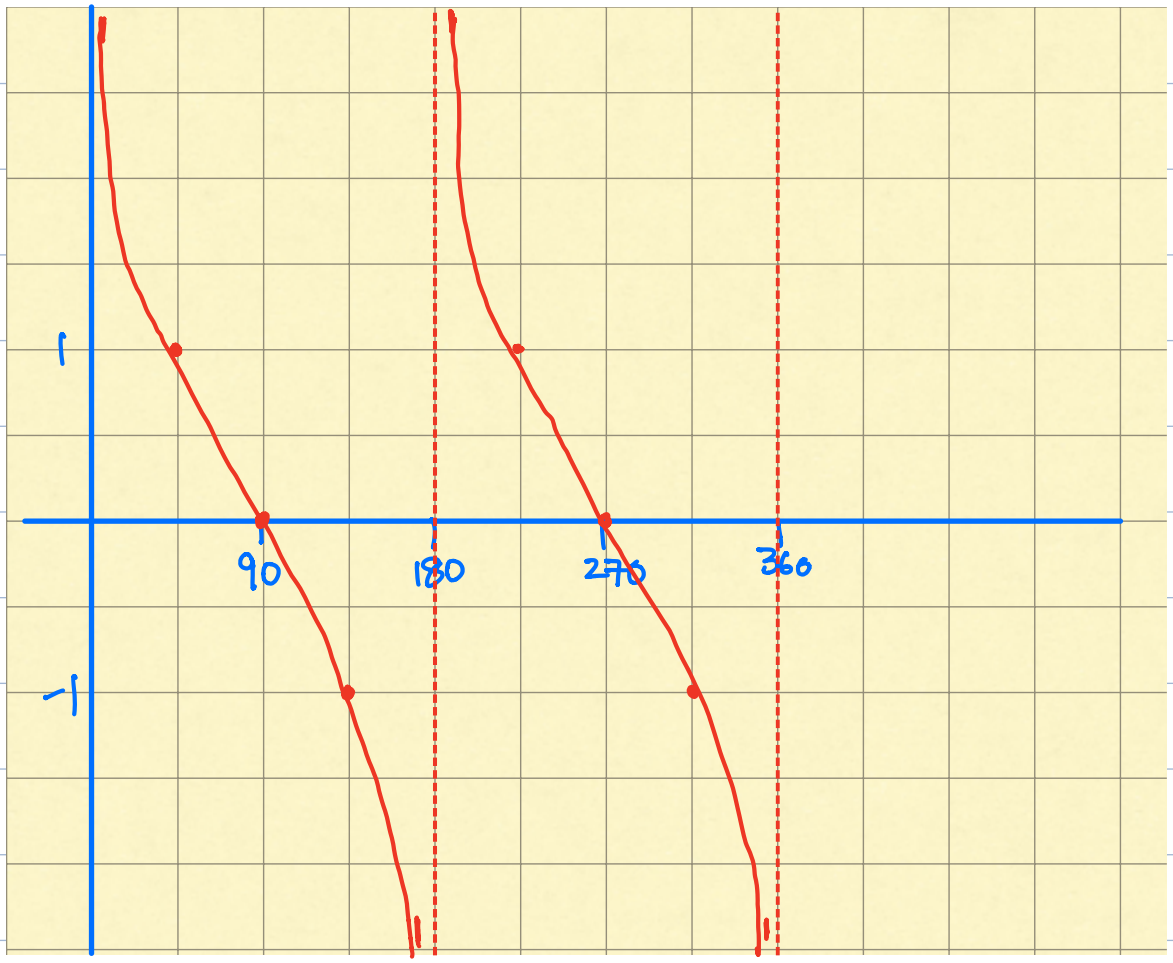
$$y = \sec x = \frac{1}{\cos x}$$

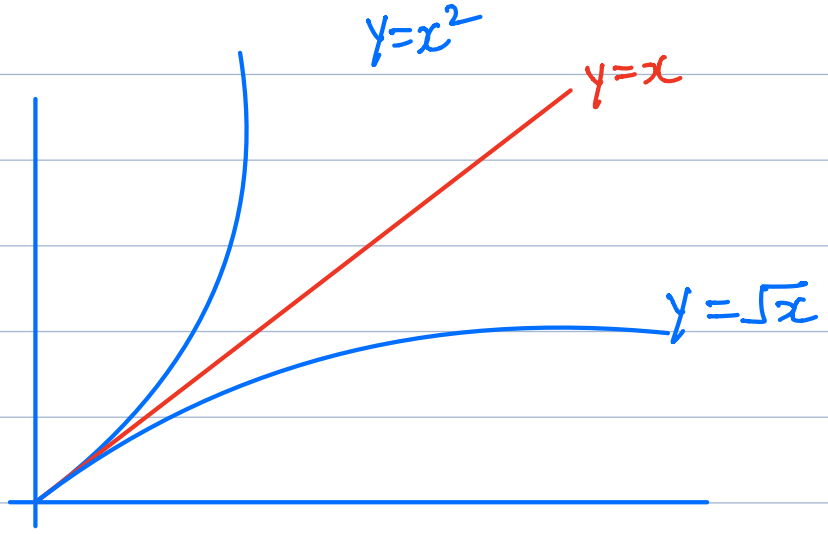




$$y = \cot x = \frac{1}{\tan x}$$







2 **(i)** By sketching a suitable pair of graphs, show that the equation

$$\operatorname{cosec} x = \tfrac{1}{2}x + 1,$$

where x is in radians, has a root in the interval $0 < x < \tfrac{1}{2}\pi$. [2]

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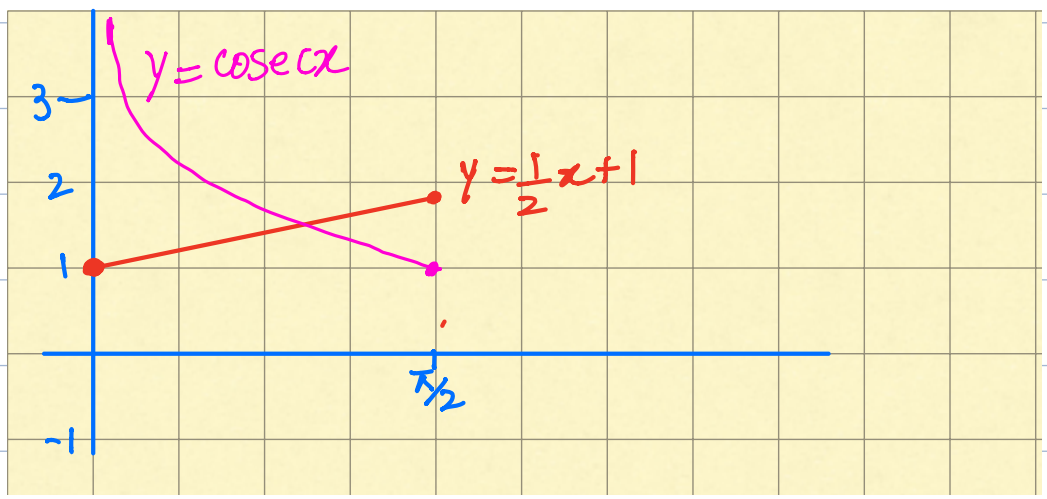
$y = \operatorname{cosec} x = \frac{1}{\sin x}$



$y = \frac{1}{2}x + 1$

y-int = 1

$y = \frac{1}{2}\left(\frac{\pi}{2}\right) + 1$

$y = 1.785$

4 **(i)** By sketching a suitable pair of graphs, show that the equation

$$2 - x = \ln x$$

has only one root. [2]

$y = 2 - x$
x-int $= 2$
y-int $= 2$

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