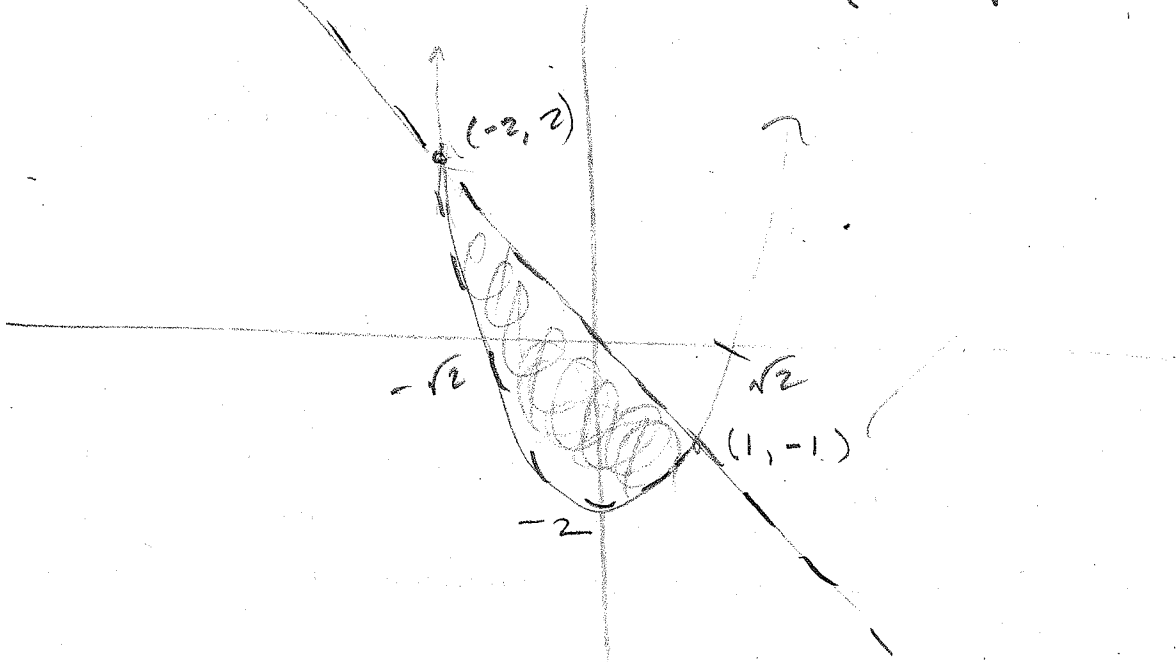


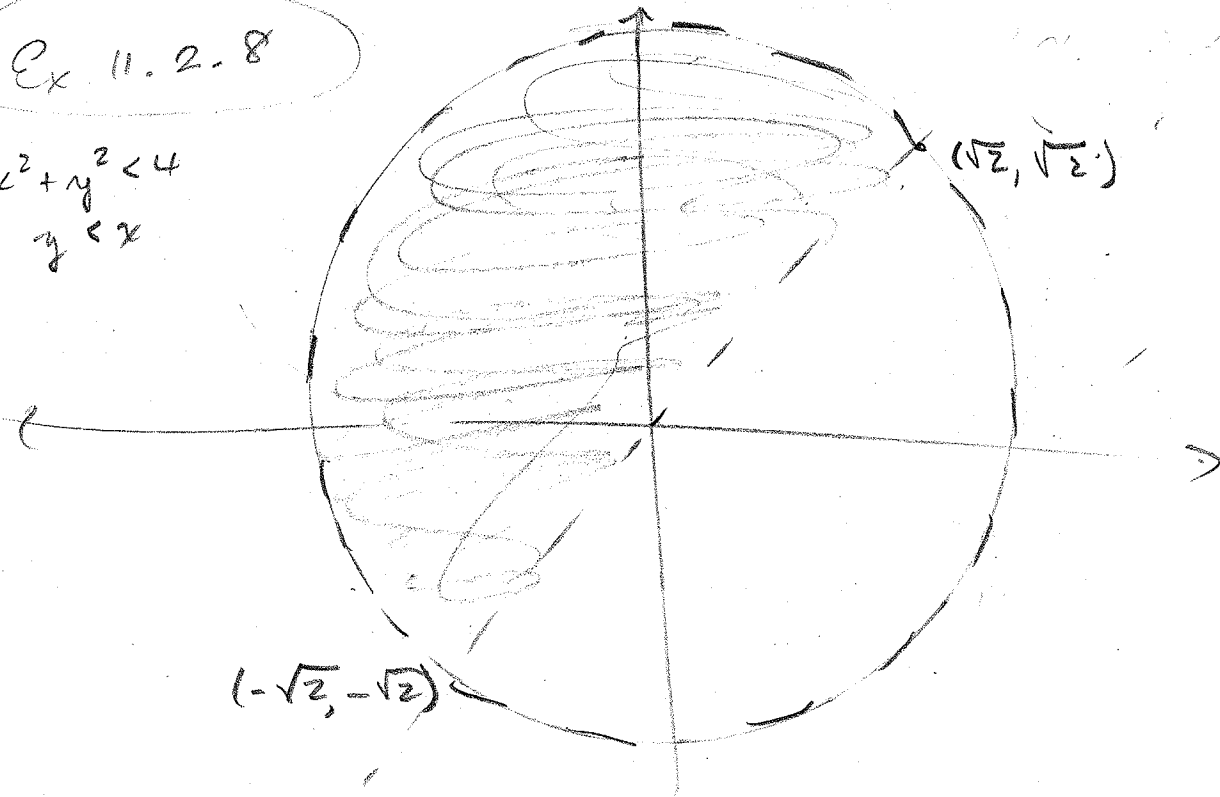
Ex 11.2.7

$$\begin{cases} y > x^2 - 2 \\ x + y > 0 \end{cases}$$



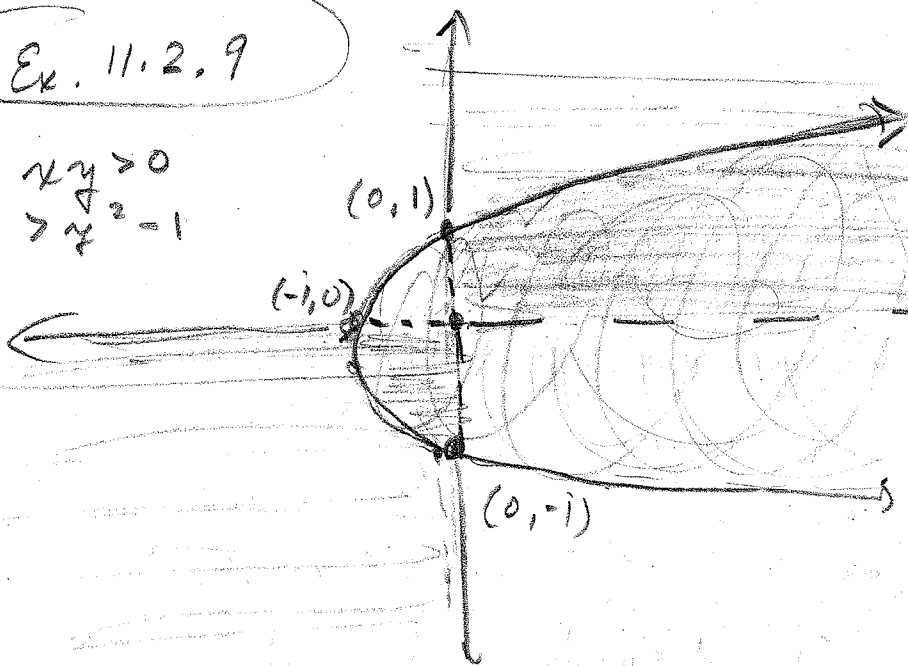
Ex 11.2.8

$$\begin{cases} x^2 + y^2 < 4 \\ y < x \end{cases}$$

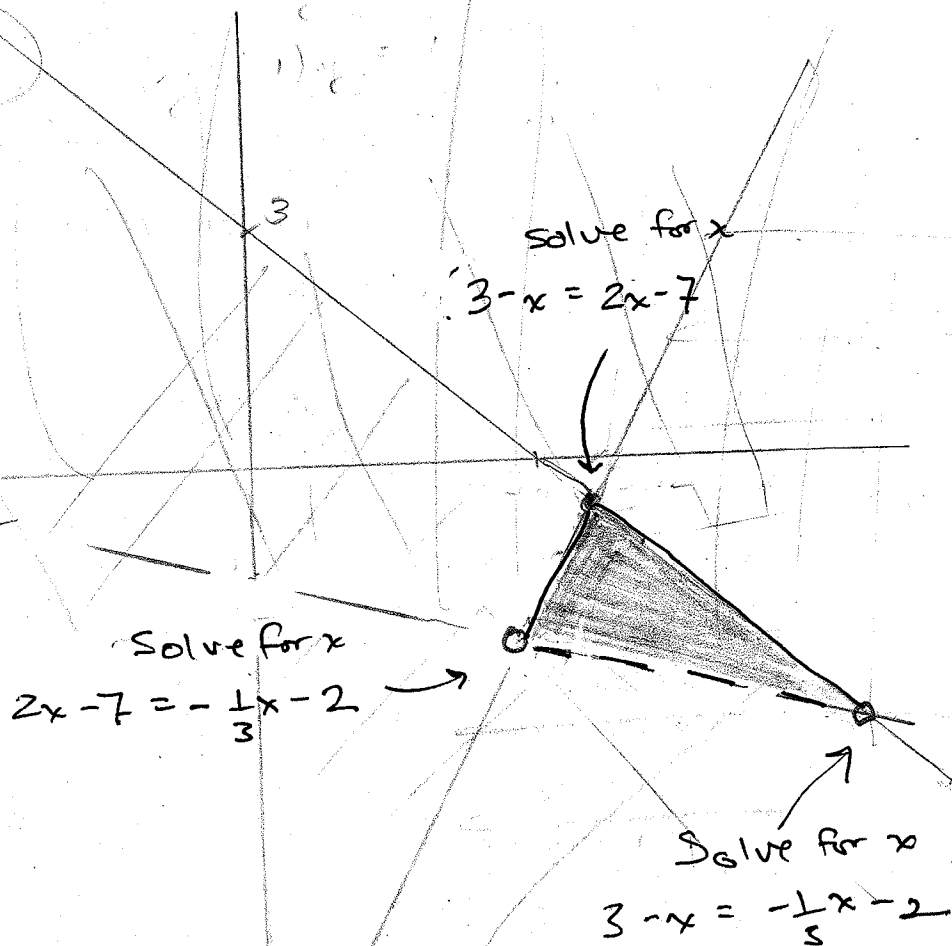


Ex. 11.2.9

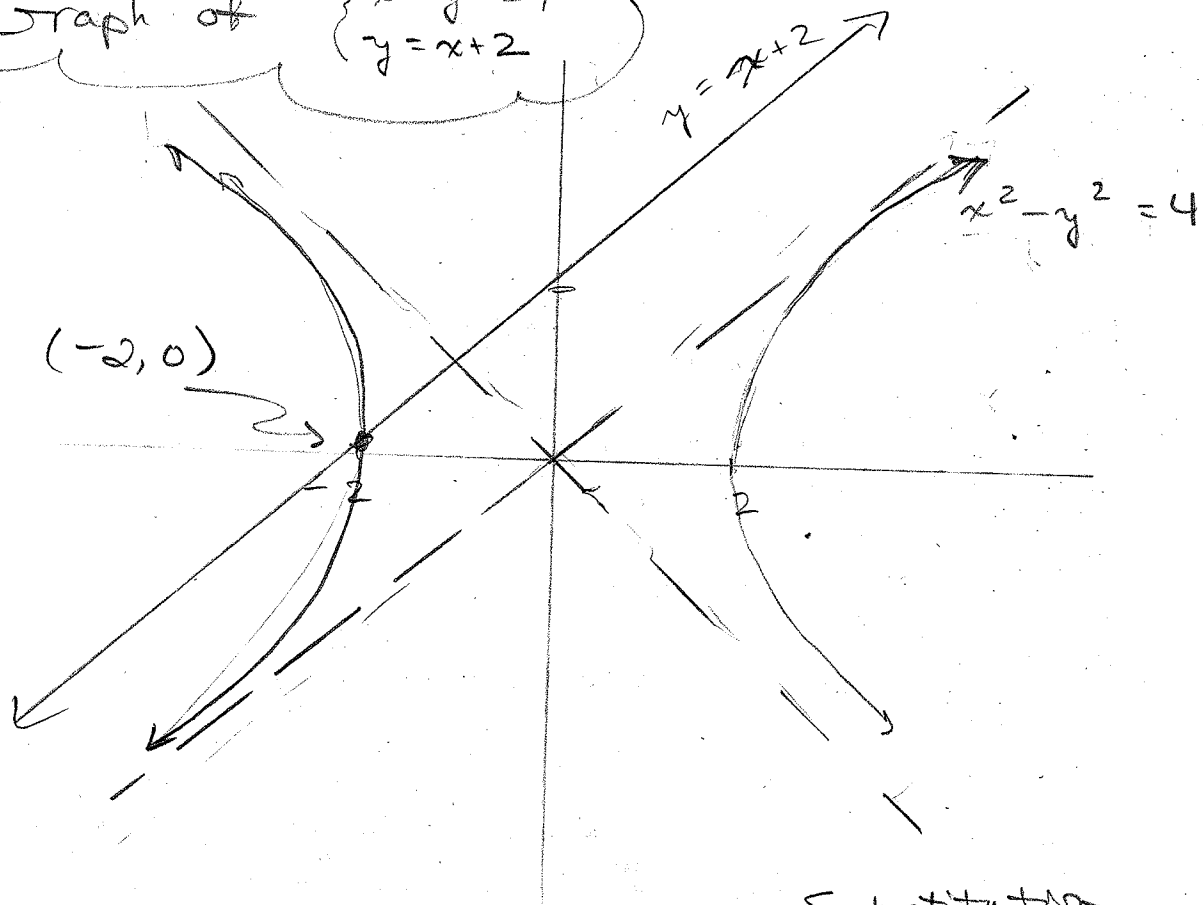
$$\begin{cases} x^2 > 0 \\ x > x^2 - 1 \end{cases}$$



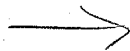
Ex 11.2.10



Graph of $\begin{cases} x^2 - y^2 = 4 \\ y = x + 2 \end{cases}$



$$\begin{cases} y = x + 2 \\ x^2 - y^2 = 4 \end{cases}$$



Substitution

$$\begin{aligned} x^2 - (x+2)^2 &= 4 \\ x^2 - x^2 - 4x - 4 &= 4 \end{aligned}$$

$$-4x = 8$$

$$\begin{cases} x = -2 \\ y = 0 \end{cases}$$

(only soln)

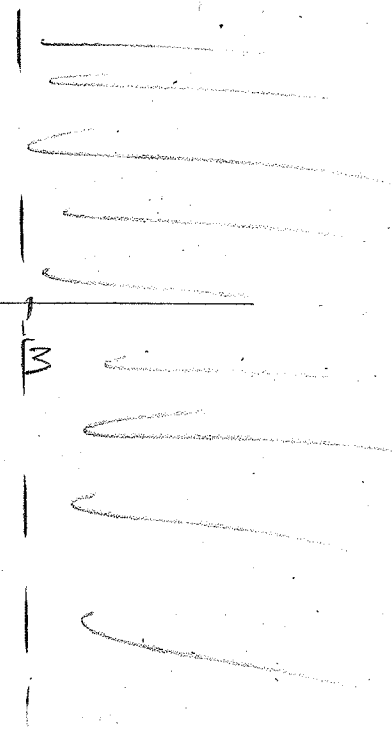
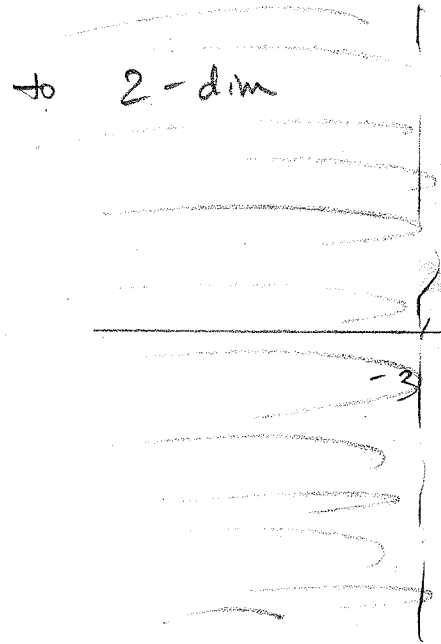
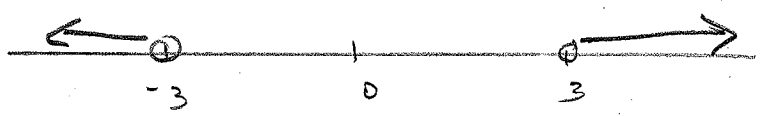
The system of
the line $y = -x + 2$
from #2a to the
hyperbola $x^2 - y^2 = 4$
from #2b,

Sec. 11.2

#1g

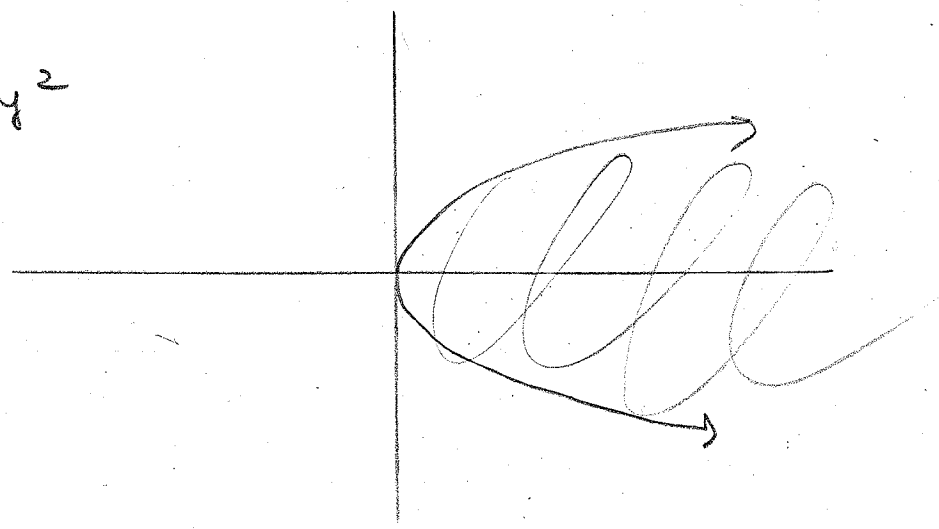
Graph $|x| > 3$ on Cartesian coord. system.

from 1-dim



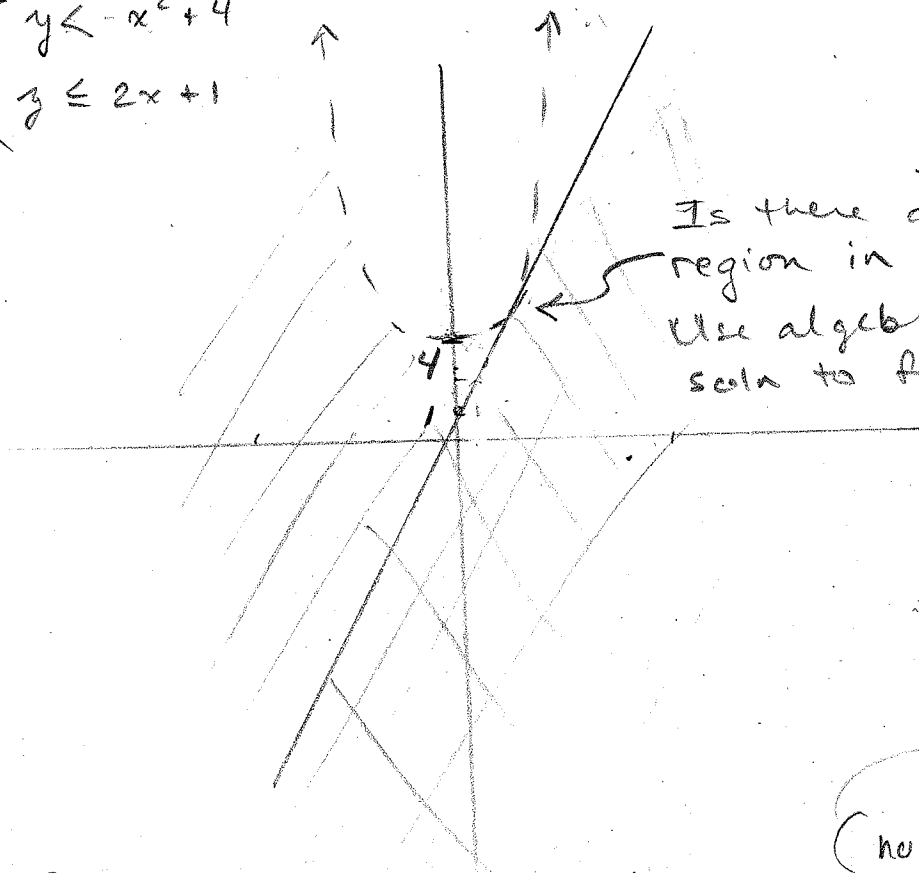
#1e

$x \geq y^2$



A little
lice
#2h

$$\begin{cases} y < -x^2 + 4 \\ z \leq 2x + 1 \end{cases}$$



Set $x^2 + 4 = 2x + 1$

$$x^2 - 2x + 3 = 0$$

$$x = \frac{+2 \pm \sqrt{4 - 4(1)(3)}}{2} = \frac{2 \pm \sqrt{-8}}{2}$$

no real soln

On mine, I made the parabola point up. The graph shows possible intersection, but the algebra shows the truth.

For #2h,

$$\begin{cases} y < -x^2 + 4 \\ y \leq 2x + 1 \end{cases}, \text{ we solve}$$

similarly as

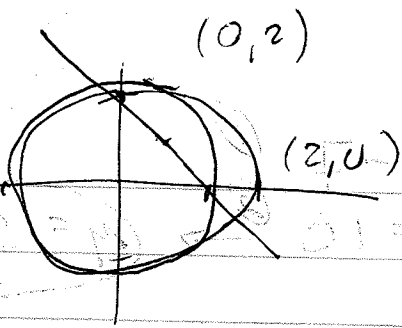
$$-x^2 + 4 = 2x + 1$$

$$x^2 + 2x - 3 = 0$$

$$(x+3)(x-1) = 0$$

Vertices $(-3, -5)$
 $(1, 3)$
not in soln

2a)



$$y = -x + 2$$

$$x^2 + y^2 = 4$$

$$x^2 + (2-x)^2 = 4$$

$$x^2 + 4 - 4x + x^2 = 4$$

$$2x^2 - 4x = 0$$

$$2x(x-2) = 0$$

2b)

$$\begin{cases} x^2 - y^2 = 4 \\ 3x - 2y = 0 \end{cases}$$

Substitution $y = \frac{3}{2}x$

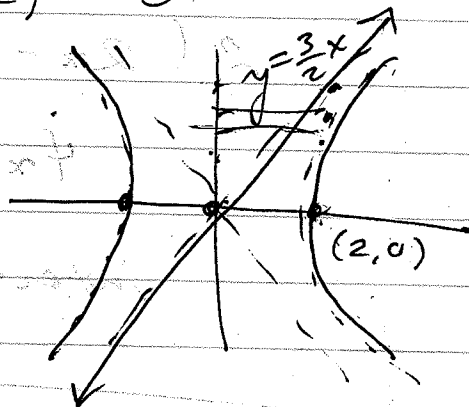
$$x^2 - \left(\frac{3}{2}x\right)^2 = 4$$

$$\frac{4x^2}{4} - \frac{9x^2}{4} = 4 \rightarrow -\frac{5}{4}x^2 = 4$$

$$\rightarrow x^2 = -\frac{16}{5}$$

x-intercept: $x^2 - 0 = 4 \rightarrow x = \pm 2$

y-intercept: $0 - y^2 = 4 \rightarrow y = \pm \sqrt{2}i$



3b)

$$\begin{cases} y = |x| \\ y = e^x \end{cases}$$

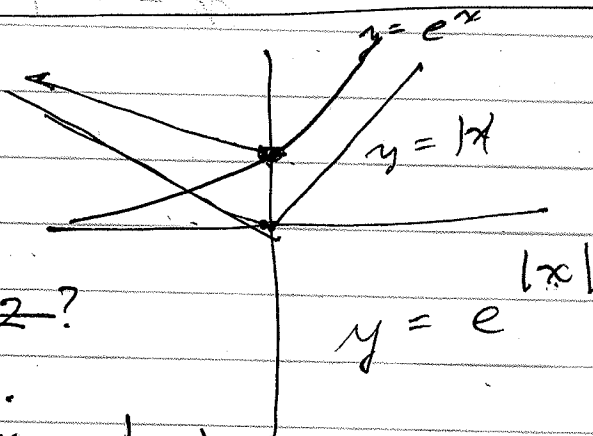
$$y = e^0 = 1$$

~~$$e \approx 2.712?$$~~

$$e \approx 2.7182...$$

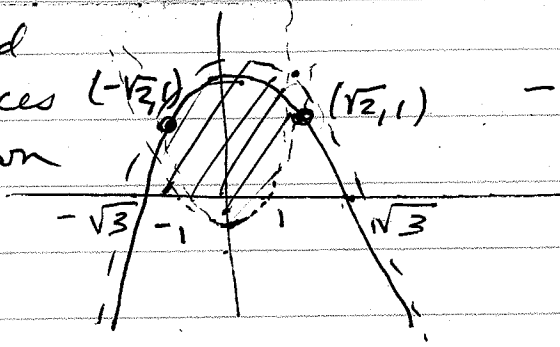
$$\ln e^x = \ln |x|$$

$$x = \ln |x|$$



#2f

Find vertices of region



$$-x^2 + 3 = x^2 - 1 \text{ sub.}$$

$$2x^2 = 4$$

$$x^2 = 2$$

$$x = \pm\sqrt{2}$$

$$y = (\sqrt{2})^2 - 1$$

$$= 1$$

$$= (-\sqrt{2})^2 - 1$$

$$= 1$$

Solving by elimination

$$y = -x^2 + 3$$

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

$$\hline 2y = 0 + 2$$

$$y = 1, \quad x = \pm\sqrt{y+1}$$

$$= \pm\sqrt{1+1}$$

$$= \pm\sqrt{2}$$