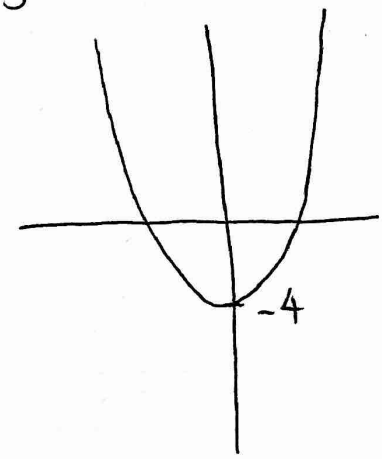
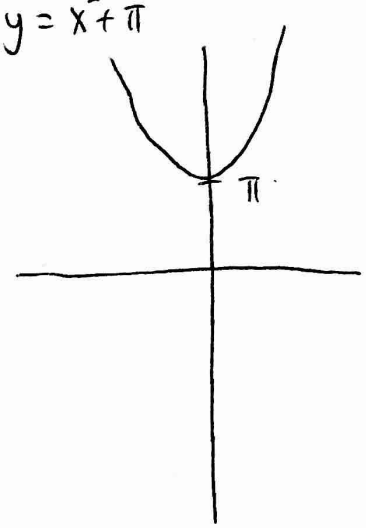
Math 2 HW 5

4.4

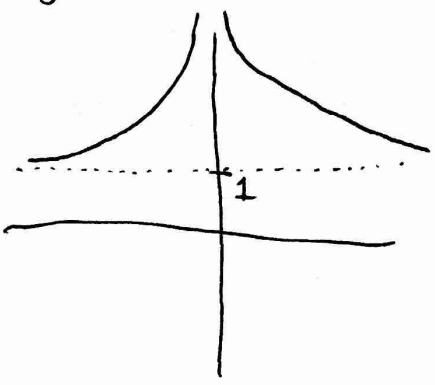
5a) $y = x^2 - 4$



5b) $y = x^2 + \pi$

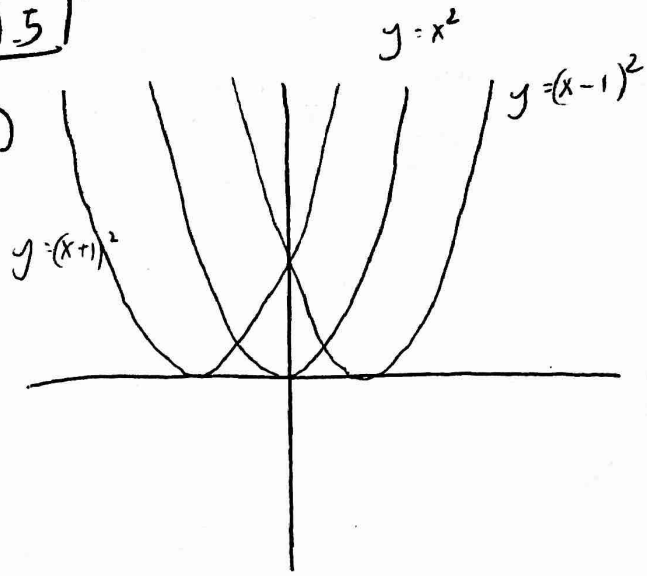


5c) $y = x^{-2} + 1$

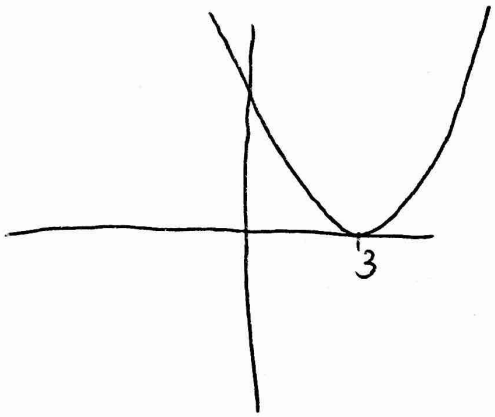


4.5

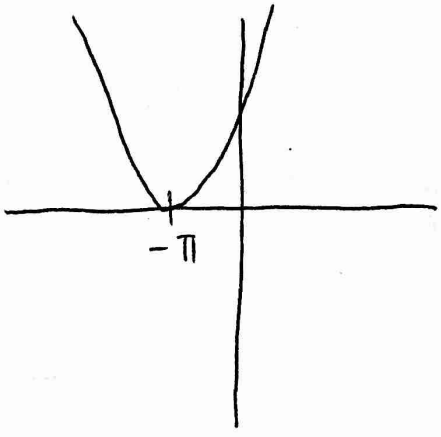
1)



2) a) $f(x) = (x-3)^2$

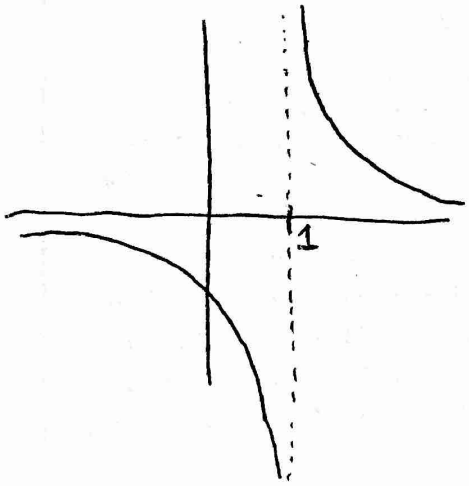


b) $f(x) = (x+\pi)^2$

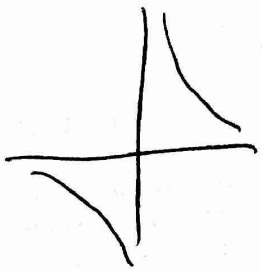


4.5

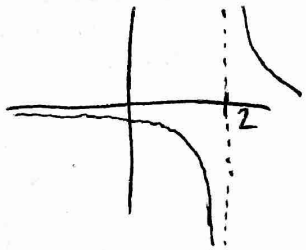
#2c $y = \frac{1}{x-1}$



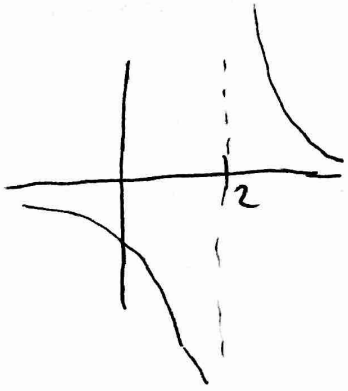
#3 $y = \frac{1}{x}$



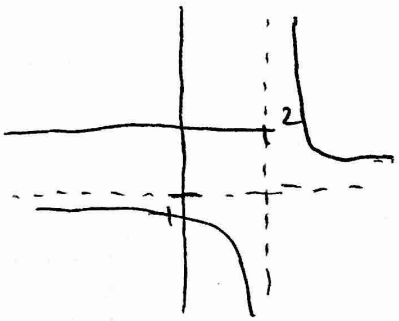
$y = \frac{1}{x-2}$



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

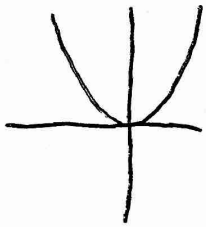


$y = \frac{3}{x-2} - 1$

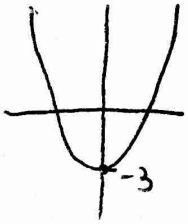


4.6

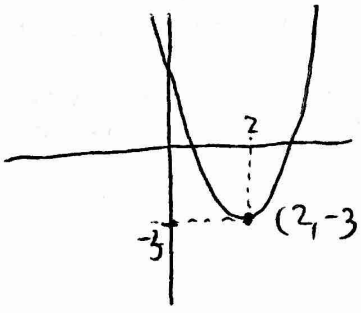
2)a) $y = x^2$



b) $y = x^2 - 3$

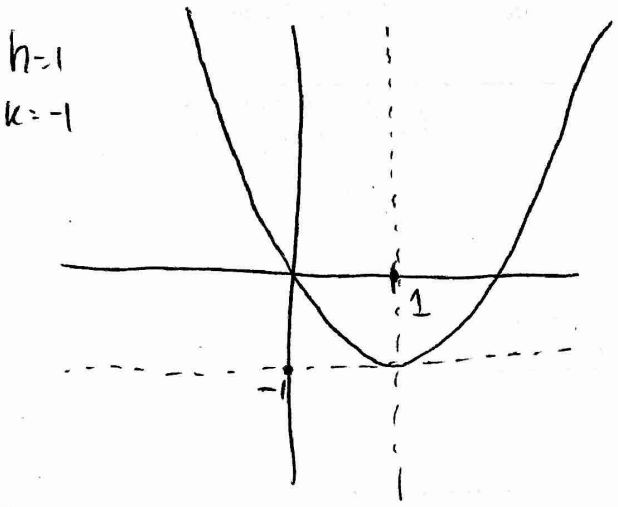


c) $y = (x-2)^2 - 3$



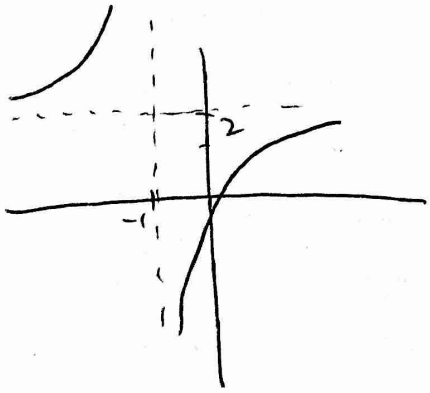
4.6)

6) $y = (x-1)^2 - 1$



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

h=-1 k=2



4.7)

1a) $3x - 2y = 16$

$5x + y = 5$

solve for y: $3x - 2y = 16$

$-2y = 16 - 3x$

$y = \frac{3x-16}{2}$

solve for y $5x + y = 5$

$y = 5 - 5x$

so $\frac{3x-16}{2} = 5 - 5x$

$3x - 16 = 10 - 10x$

$13x = 26$

$x = 2$

plug it back to solve for y:

$y = 5 - 5x = 5 - 5 \cdot 2 = -5$

solution is $(x, y) = (2, -5)$

2b) $x^2 - 4y = 6$

$2x + 2y = 3$

Solve for y: $x^2 - 4y = 6$

$-4y = 6 - x^2$

$y = \frac{x^2 - 6}{4}$

Solve for y: $2x + 2y = 3$

$2y = 3 - 2x$

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

So, $\frac{x^2 - 6}{4} = \frac{3 - 2x}{2}$

$2x^2 - 12 = 12 - 8x$

$2x^2 + 8x - 24 = 0$

$x^2 + 4x - 12 = 0$

$(x + 6)(x - 2) = 0$

$x = 2, -6$

When $x = 2$

$y = \frac{3 - 2 \cdot x}{2} = \frac{3 - 2 \cdot 2}{2}$

$= -\frac{1}{2}$

So $\boxed{(x, y) = (2, -\frac{1}{2})}$ is a solution.

When $x = -6$

$y = \frac{3 - 2 \cdot x}{2} = \frac{3 - 2 \cdot (-6)}{2}$

$= \frac{15}{2}$

So $\boxed{(x, y) = (-6, \frac{15}{2})}$ is a solution

4.7

2) a)

$x^2 = y - 2$ & $2x + 3y = -7$

$\downarrow$

$y = x^2 + 2$ $\quad$ $y = \frac{-7 - 2x}{3}$

so $x^2 + 2 = \frac{-7 - 2x}{3}$

$3x^2 + 6 = -7 - 2x$

$3x^2 + 2x + 13 = 0$

use quadratic formula, then we have a negative number inside square root $\Rightarrow$ no real solutions

$\Rightarrow$ no intersections.

2b) $x + y = 2$, $\sqrt{x} + 4y = -6$

$y = 2 - x$, $y = \frac{-6 - \sqrt{x}}{4}$

$\Rightarrow$ $2 - x = \frac{-6 - \sqrt{x}}{4}$

$8 - 4x = -6 - \sqrt{x}$

$0 = 4x - \sqrt{x} - 14$

$(4\sqrt{x} + 7)(\sqrt{x} - 2) = 0$

$\downarrow$

no solution

$\sqrt{x} - 2 = 0$

$\sqrt{x} = 2$

$x = 4$

$\Rightarrow y = 2 - x = 2 - 4 = -2$

$(x, y) = (2, -2)$