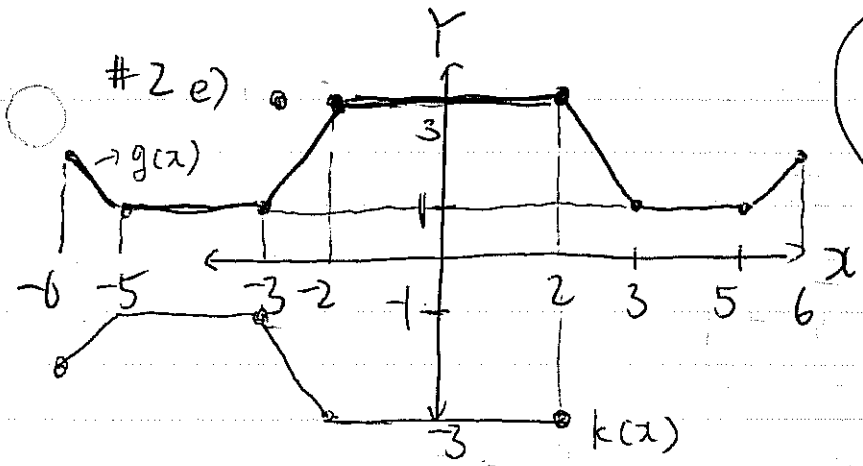
#2 e)



$g(x)$

$D = \{x \in R, -6 \le x \le 2\}$

$R = \{y \in R, 1 \le y \le 3\}$

3. e) $k(x) = -f(-x)$ → you reflect the parent graph twice: once on x axis and once on y axis.

$D = \{x \in \mathbb{R}, -6 \le x \le 2\}$

$R = \{y \in \mathbb{R}, -3 \le y \le 1\}$

4. d) $f(x) = \frac{1}{x-3} - 6 \quad g(x) = -f(-x)$

$$g(x) = -\left(\frac{1}{-x-3} - 6\right)$$

$$= -\left(\frac{-1}{x+3} - 6\right) = \frac{1}{x+3} + 6$$

e) $f(x) = -\sqrt{x-2} + 5 \quad g(x) = f(-x)$

$$g(x) = -\sqrt{-x-2} + 5$$

f) $f(x) = \sqrt{x+9} - 1 \quad g(x)$

4 f) $f(x) = \sqrt{x+9} - 1$ $\quad g(x) = -f(-x)$

$g(x) = -\left(\sqrt{-x+9} - 1\right)$

$g(x) = -\sqrt{-x+9} + 1$

5. a) $g(x)$ is reflection of $f(x)$ on y axis, $= f(-x)$

b) $g(x)$ is reflection of $f(x)$ on x axis. $= -f(x)$

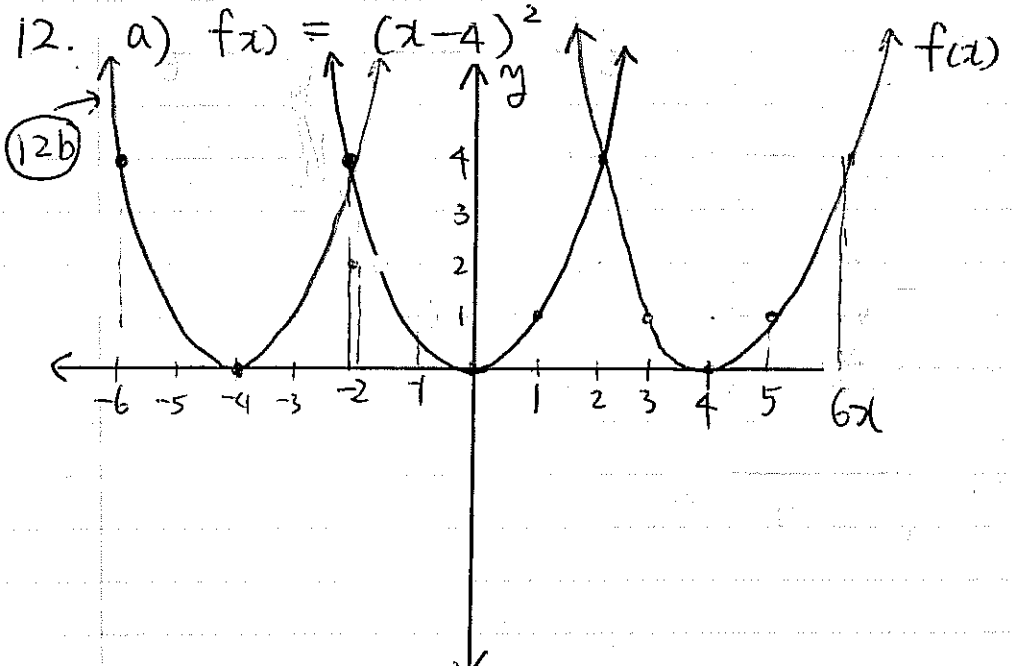
c) $g(x)$ is // // // // x axis. and y axis so $\Longrightarrow -f(-x)$

6. reflected on both y axis and x axis.

7. ① Reflection on x axis (generally speaking) → Domain is not changed but range is changed.

② Reflection on y axis (generally speaking) → Domain is changed, but range is not changed.

12. a) $f(x) = (x-4)^2$



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#12 c) $h(x) = (x+4)^2$ or translate $f(x)$ to the left 8 units.

b) $g(x) = f(-x) = (-x-4)^2$

$\therefore g(x) = (-x-4)^2$

d) $g(x) = (-x-4)^2$

$= [-1(x+4)]^2 = (-1)^2 \cdot (x+4)^2$

$g(x) = (x+4)^2 = h(x)$

e) reflection in the x axis $\longrightarrow$ $-f(x) = -(x-4)^2$

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

$J(x) = -(x+4)^2$ (no translation has occured)

Answer: NO reflection in the x axis just changes the orientation. (not position)

f) Yes it works as long as the graph is Symmetrical about a vertical line.

#13 a) Base Function = $f(x) = \sqrt{x}$ arrow without gravity

Shift up by 3 and left by 2.

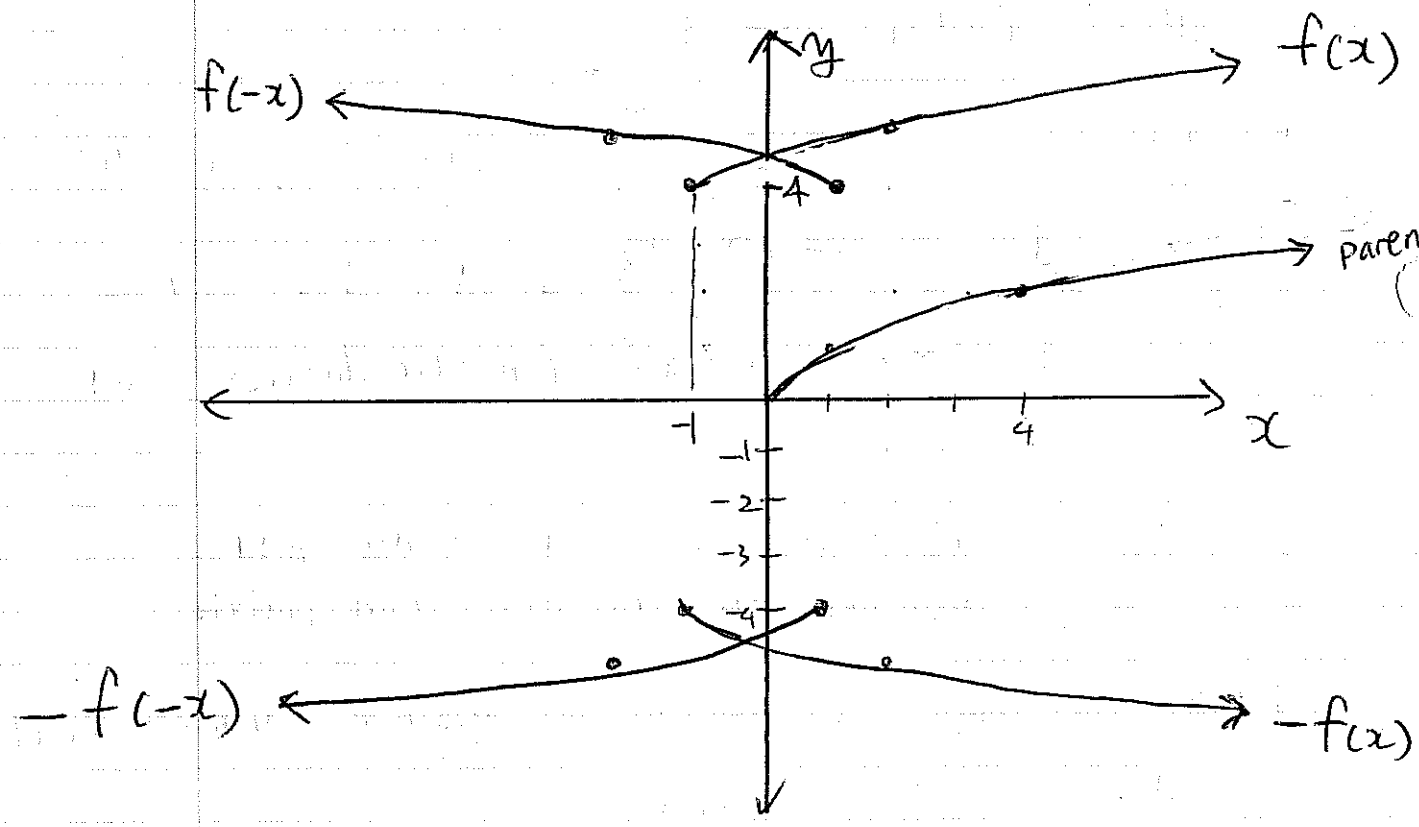
#13b) $-f(x) = -(\sqrt{x+2} + 3)$

$= -\sqrt{x+2} - 3$

$-f(-x) = -(\sqrt{-x+2} + 3)$

$= -\sqrt{-x+2} - 3$

$f(-x) = \sqrt{-x+2} + 3$



$f(x) \rightarrow D = \{x \in R,\ x \geq -1\}$ $R = \{y \in R,\ y \geq 4\}$

$f(-x) \rightarrow D = \{x \in R,\ x \leq 1\}$ $R = \{y \in R,\ y \geq 4\}$

$-f(x) \rightarrow D = \{x \in R,\ x \geq -1\}$ $R = \{y \in R,\ y \leq -4\}$

$-f(-x) \rightarrow D = \{x \in R,\ x \leq 1\}$ $R = \{y \in R,\ y \leq -4\}$