HW #60

① $f(x) = 2(x+5)^2 - 8$

$0 = 2(x+5)^2 - 8$

$+8 \qquad +8$

$8 = 2(x+5)^2$

$\frac{8}{2} = \frac{2(x+5)^2}{2}$

$\sqrt{4} = \sqrt{(x+5)^2}$

$\pm 2 = x+5$

$2 = x+5$ or $-2 = x+5$

$-5 \quad -5 \qquad -5 \quad -5$

$-3 = x$ or $-7 = x$

stretch vertically
move left 5 down 8

2 x int. makes sense

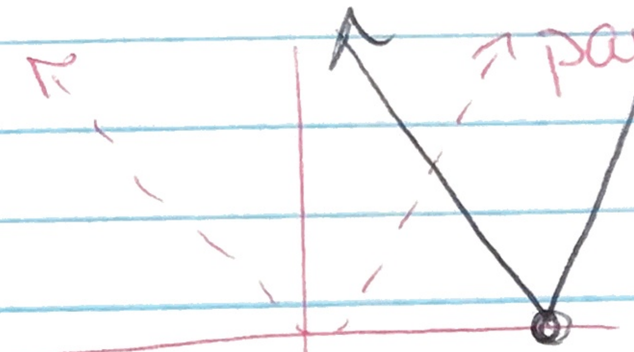
② $f(x) = |x-7|$

$0 = |x-7|$

$0 = x-7$

$+7 \qquad +7$

$7 = x$



moved right 7

1 x int makes sense

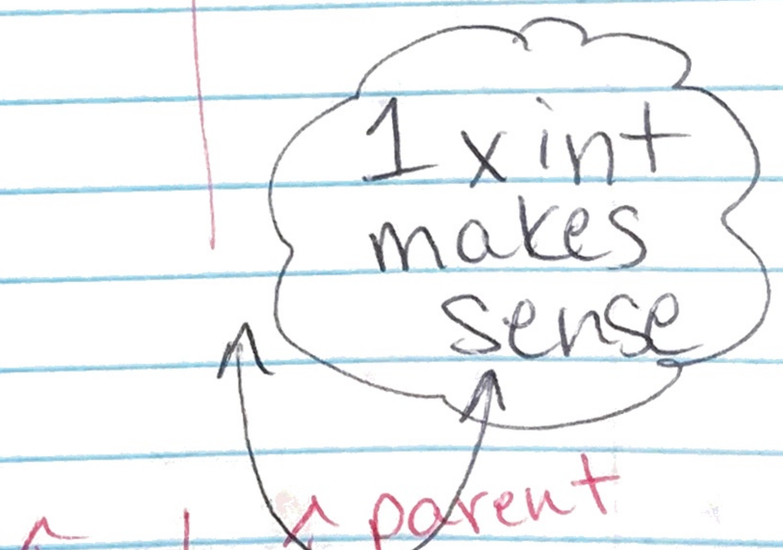
③ $14 = (x-3)^2 + 20$

$-20 \qquad -20$

$\sqrt{-6} = \sqrt{(x-3)^2}$

we don't know $\sqrt{-6}$ YET!

$= x-3$



moved right 3 & up 20

it makes sense that it doesn't have y values of 14 b/c it's above it

Sorry, I was distracted ; its left 2

(4) $6 = -\frac{1}{3}|x+2| + 10$

$-10 \qquad -10$

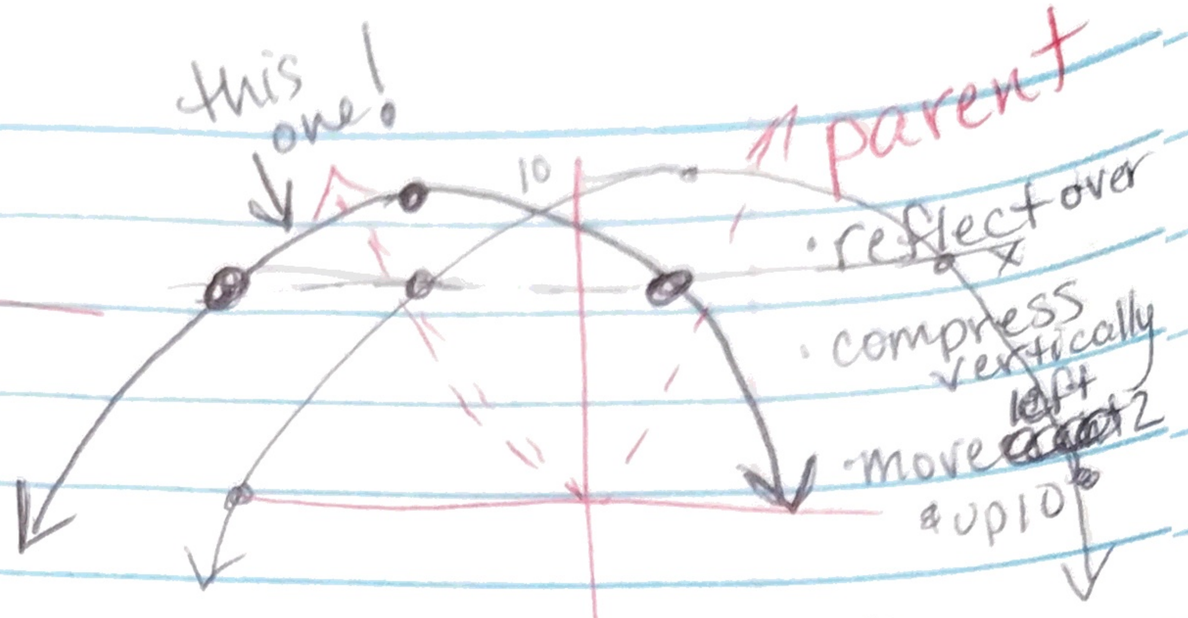
$-4 = -\frac{1}{3}|x+2|$ ·-3

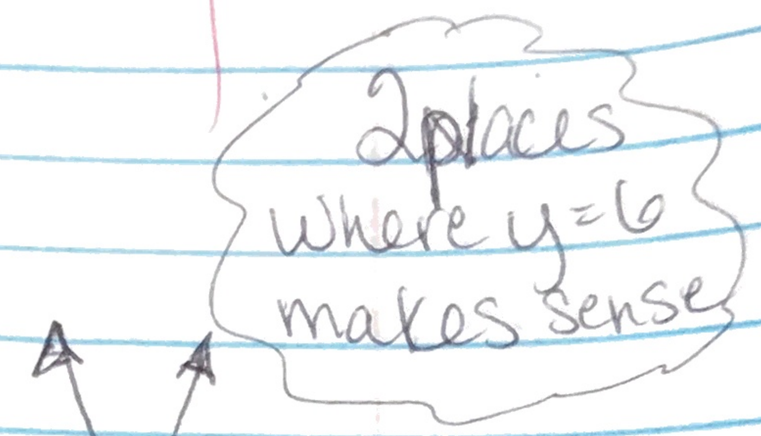
$12 = |x+2|$

$12 = x+2$ or $-12 = x+2$

$-2 \quad -2 \qquad -2 \quad -2$

$\boxed{10 = x}$ or $\boxed{-14 = x}$





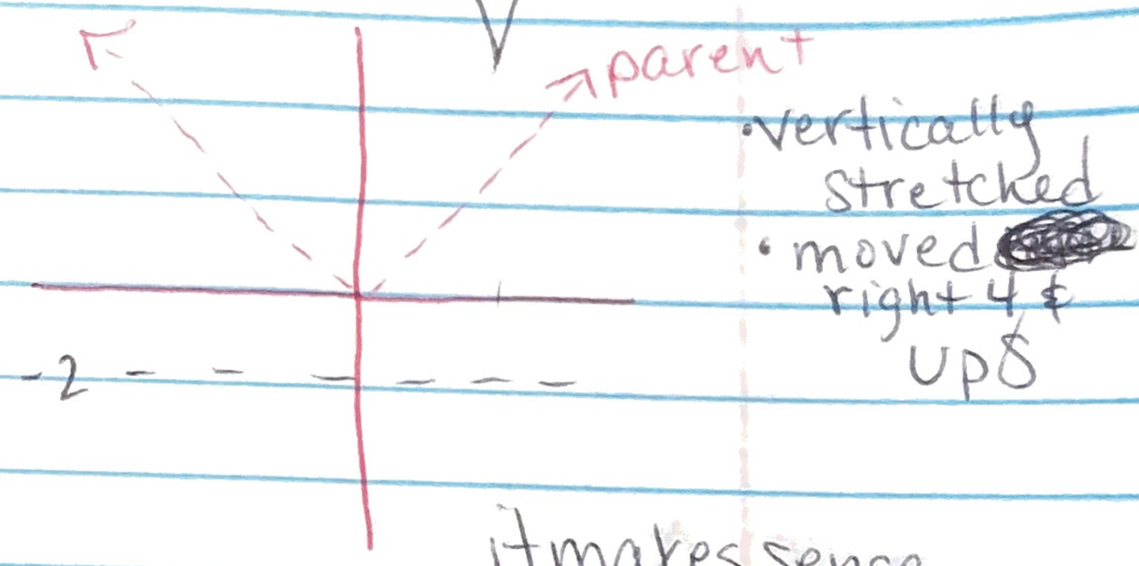
(5) $-2 = 5|x-4| + 8$

$-8 \qquad -8$

$-10 = 5|x-4|$

$-2 = |x-4|$

absolute value can't be negative



it makes sense that there are no y values of -2

(6) $f(x) = \frac{3}{4}(x+2)^2$

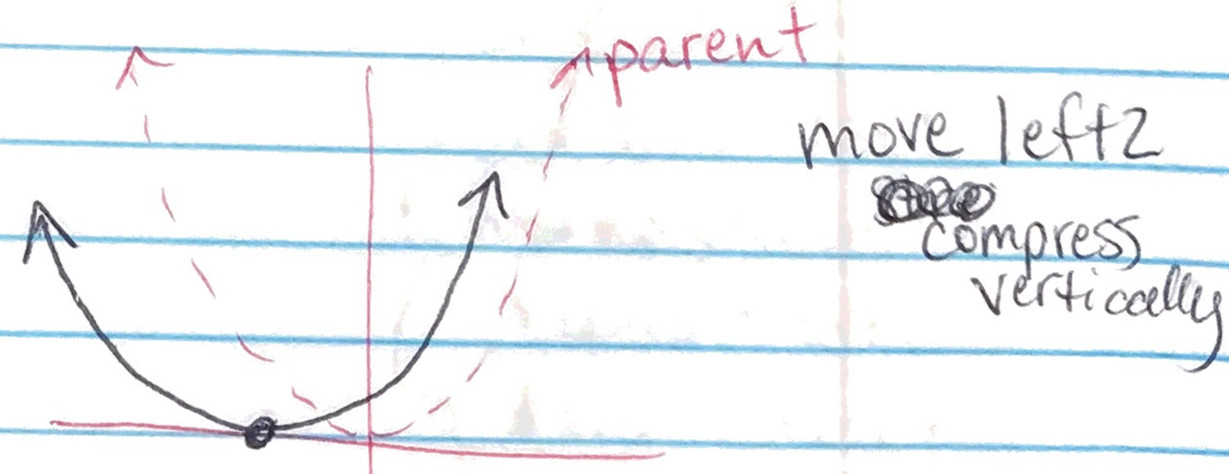
$\frac{4}{3} \cdot 0 = \frac{3}{4}(x+2)^2 \cdot \frac{4}{3}$

$\sqrt{0} = \sqrt{(x+2)^2}$

$0 = x+2$

$-2 \quad -2$

$\boxed{-2 = x}$



makes sense to only have 1 solution bc there is 1 x int.

(7) $f(x) = 4|x+5| - 20$

$0 = 4|x+5| - 20$

$+20 \qquad +20$

$20 = 4|x+5|$

$\frac{20}{4} = \frac{4|x+5|}{4}$

$5 = |x+5|$

$5 = x+5$ or $-5 = x+5$

$-5 \quad -5 \qquad -5 \quad -5$

$0 = x$ or $-10 = x$

makes sense for there to be 2 x int (sol'n) b/c it was moved down & not reflected

(8) $f(x) = |x-3| - 2$

$0 = |x-3| - 2$

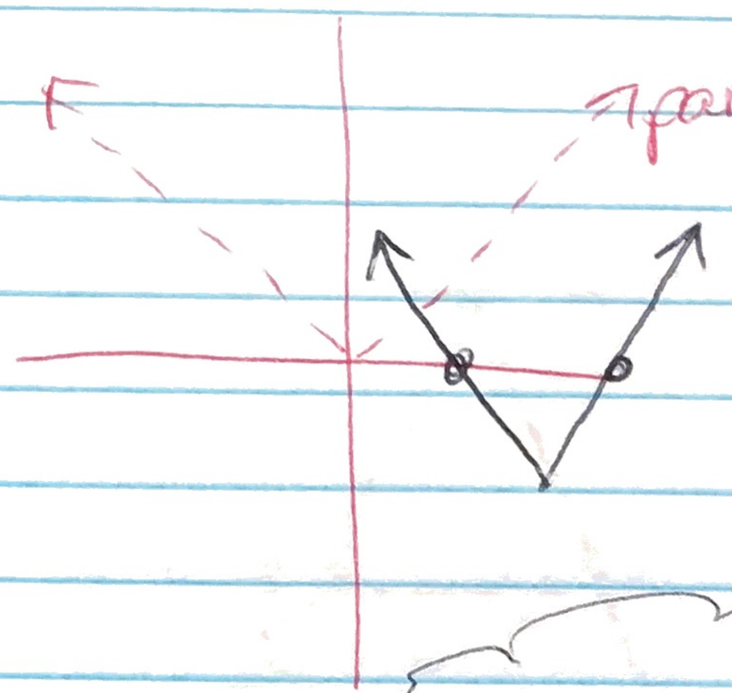
$+2 \qquad +2$

$2 = |x-3|$

$2 = x-3$ or $-2 = x-3$

$+3 \quad +3 \qquad +3 \quad +3$

$5 = x$ or $1 = x$



2 x int (sol'n) makes sense b/c it was moved down & not reflected

(9) $-4 = -2(x+4)^2 - 2$

$+2 \qquad +2$

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

$\frac{-2}{-2} = \frac{-2(x+4)^2}{-2}$

$\sqrt{1} = \sqrt{(x+4)^2}$

$\pm 1 = x+4$

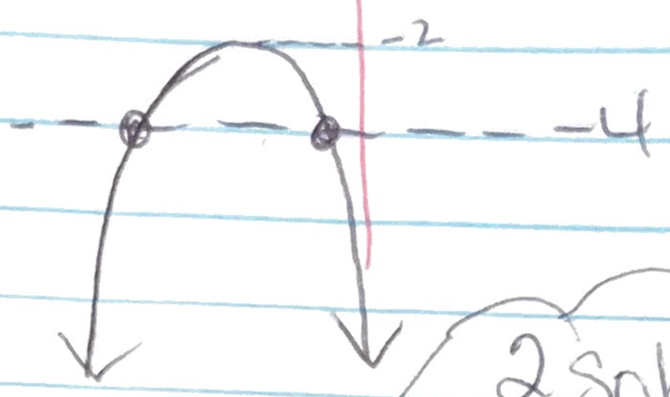
$1 = x+4$ or $-1 = x+4$

$-4 \quad -4 \qquad -4 \quad -4$

$-3 = x$ or $-5 = x$

parent

- reflect over x
- vert. stretch
- move left 4
- down 2



2 solutions makes sense b/c it was reflected & only moved down 2 so it can intersect $y=-4$ twice

(10) $7 = -|x-8| + 7$

$-7 \qquad -7$

$0 = -|x-8|$

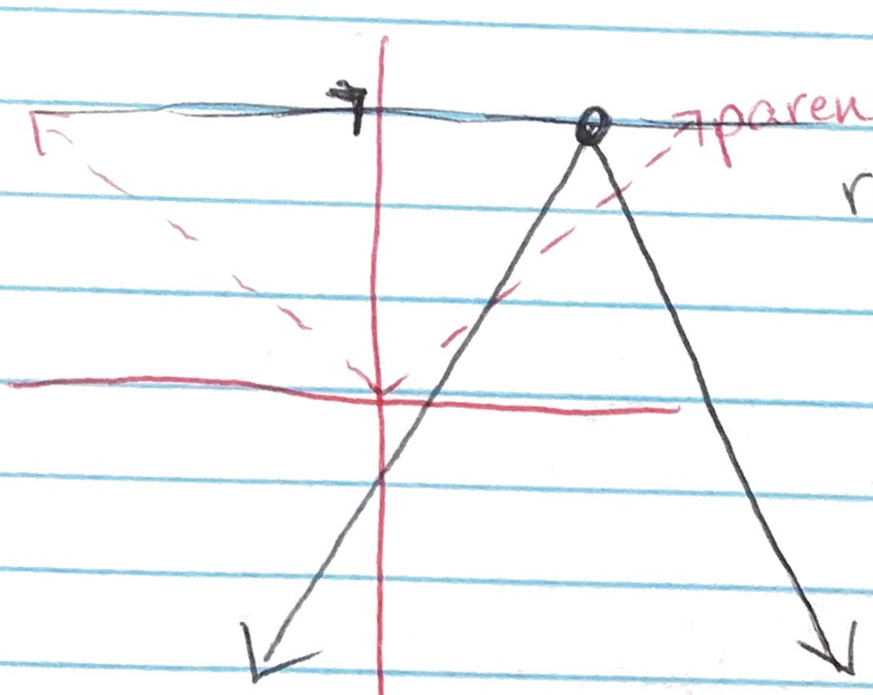
$\frac{0}{-1} = \frac{-|x-8|}{-1}$

$0 = |x-8|$

$0 = x-8$

$+8 \quad +8$

$8 = x$



reflected over x
moved right 8
& up 7

1 solution makes sense b/c it was moved up 7 which is value of the function