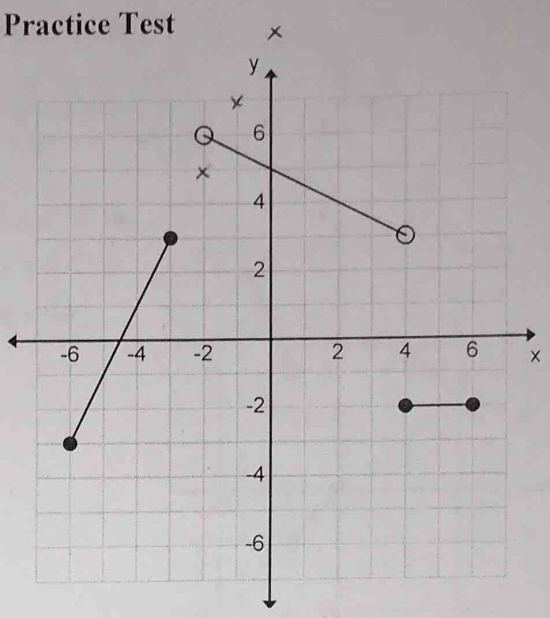
Algebra 2 Practice Test

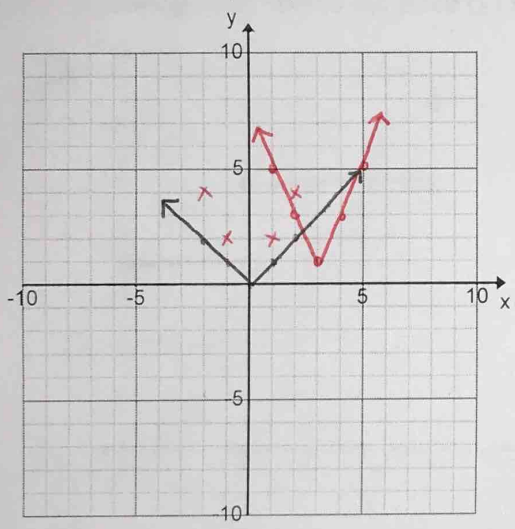
1. Write the rule that defines the graph.

$$f(x)=\begin{cases} 2x+9 & [-6,-3] \\ -\frac{1}{2}x+5 & (-2,4) \\ -2 & [4,6] \end{cases}$$



For the following questions, sketch the graph & list the transformations.

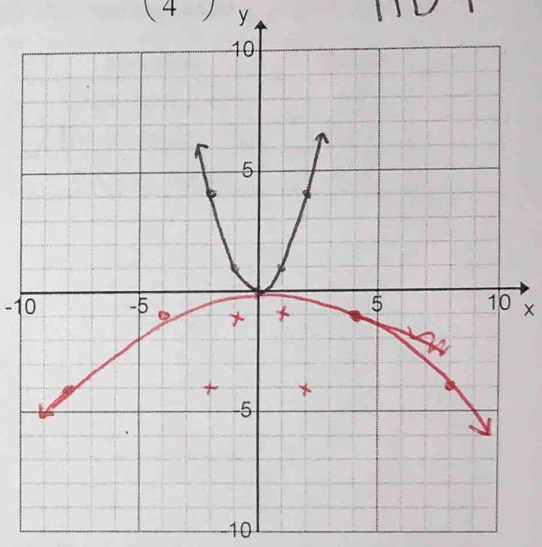
2. $f(x)=2|x-3|+1$



VD2
R3
U1

3. $y=-\left(\frac{1}{4}x\right)^2$

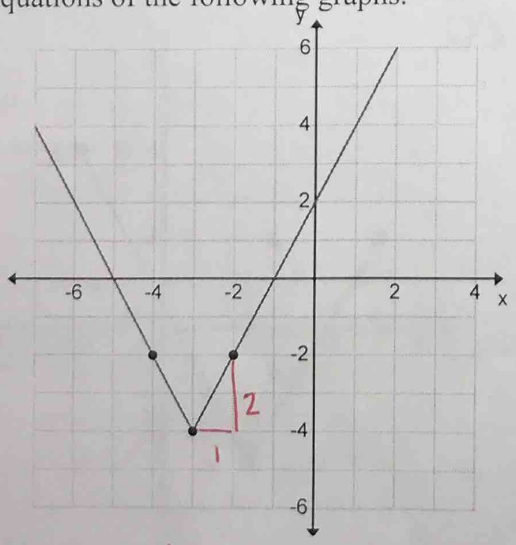
over x-axis
HD4



Find the equations of the following graphs.

4.

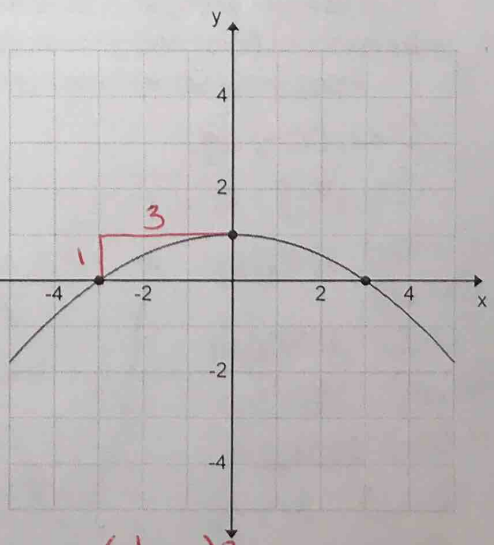
① $|x|$
② no
③ L3, D4
④ VD2
⑤ no HD



$y=2|x+3|-4$

5.

① x^2
② yes
③ U1
④ noVD
⑤ HD3



$y=-\left(\frac{1}{3}x\right)^2+1$

6. Using the graph for #3, what is the average rate of change from [-8,-4]?

(-8, -4)
(-4, -1)

$$ARC = \frac{-1-(-4)}{-4-(-8)} = \boxed{\frac{3}{4}}$$

7. Graph the following function. $f(x)=\begin{cases} -2x+1 & -4 \le x < -2 \\ x & -2 \le x \le 0 \\ 6 & 0 < x < 4 \end{cases}$

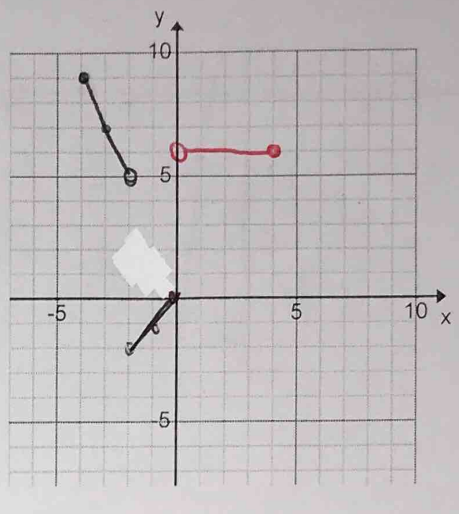
y = -2x+1

x	y
-4	9
-3	7
-2	5

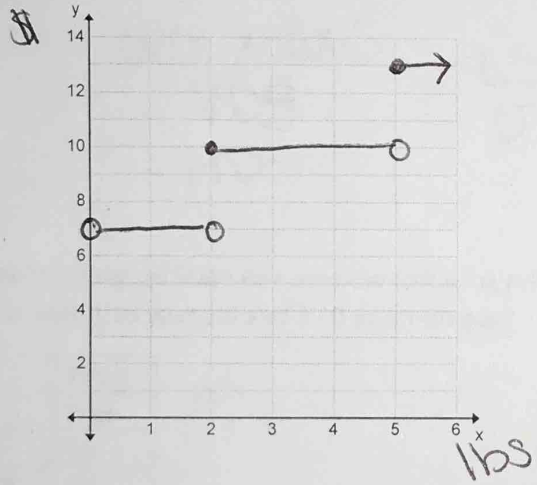
y = x

x	y
-2	-2
-1	-1
0	0

y=6



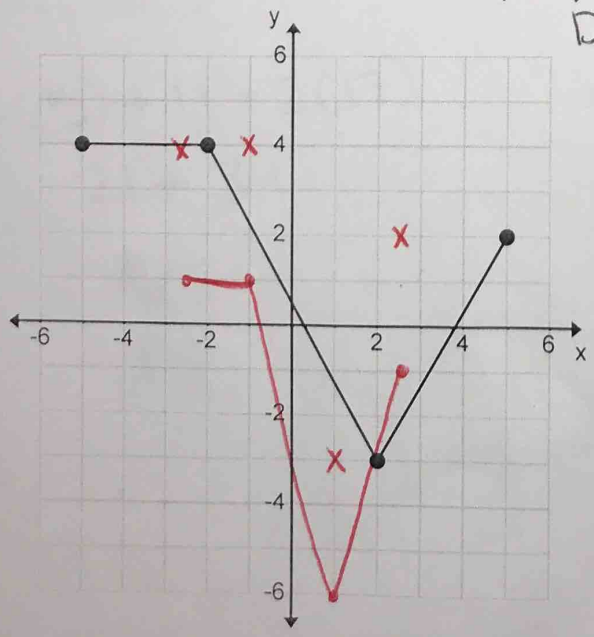
6. The following chart shows the price (y) for pounds of skittles (x). Graph the corresponding step-function.



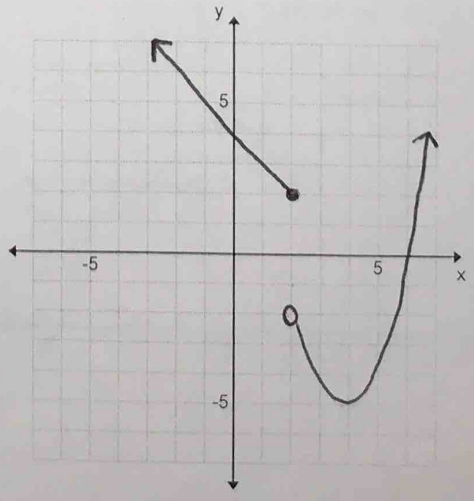
Pounds	Price
Less than 2 lbs	$7
2 lbs to under 5lbs	$10
5lbs or more	$13

7. Graph $f(2x)-3$ given the parent function below.

HD ½
D3



8. Find the domain, range, positive interval(s), negative interval(s), decreasing interval(s) and increasing interval(s) for the given graph

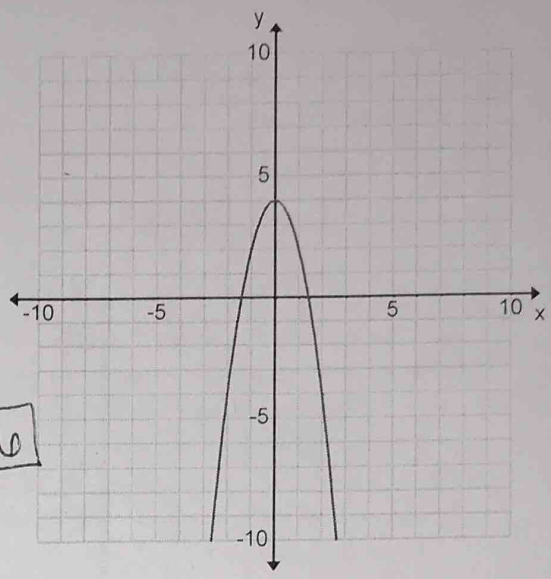


D: (-∞, ∞)
R: [-5, ∞)
positive: (-∞, 2] ∪ (6, ∞)
negative: (2, 6)
increase: (4, ∞)
decrease: (-∞, 4)
x-int: (6, 0)
y-int: (0, 4)

9. Find the average rate of change for [0,2]

(0, 4)
(2, -4)

$ARC = \frac{-4-4}{2-0} = \frac{-8}{2} = -4$



10. Find the average rate of change for [-2,-1]

(-2, -4)
(-1, 2)

$ARC = \frac{2-(-4)}{-1-(-2)} = \frac{6}{1} = \boxed{6}$

11. State the transformations for $f(x) = -3\left(\frac{x+5}{4}\right)^2 - 7$

over x-axis
VD3
HD4

L5
D7

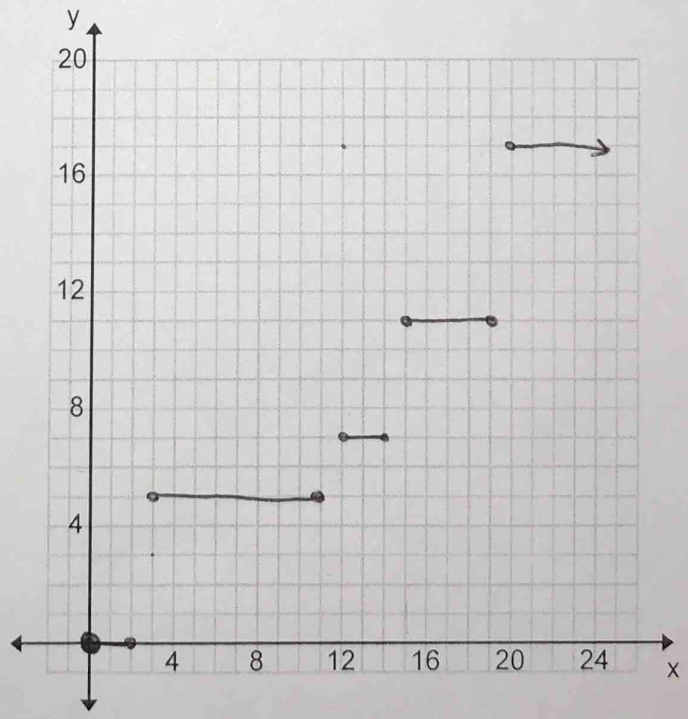
12. The Washington State Fair uses the following pricing for tickets. Graph the function. How much would a group of 2 10 year olds, 1 15 year old and 2 40 year olds pay?

Age	Price
0-2	Free
3-11	$5
12-14	$7
15-19	$11
20+	$17

$2(5) + 11 + 2(17)$

$21 + 34$

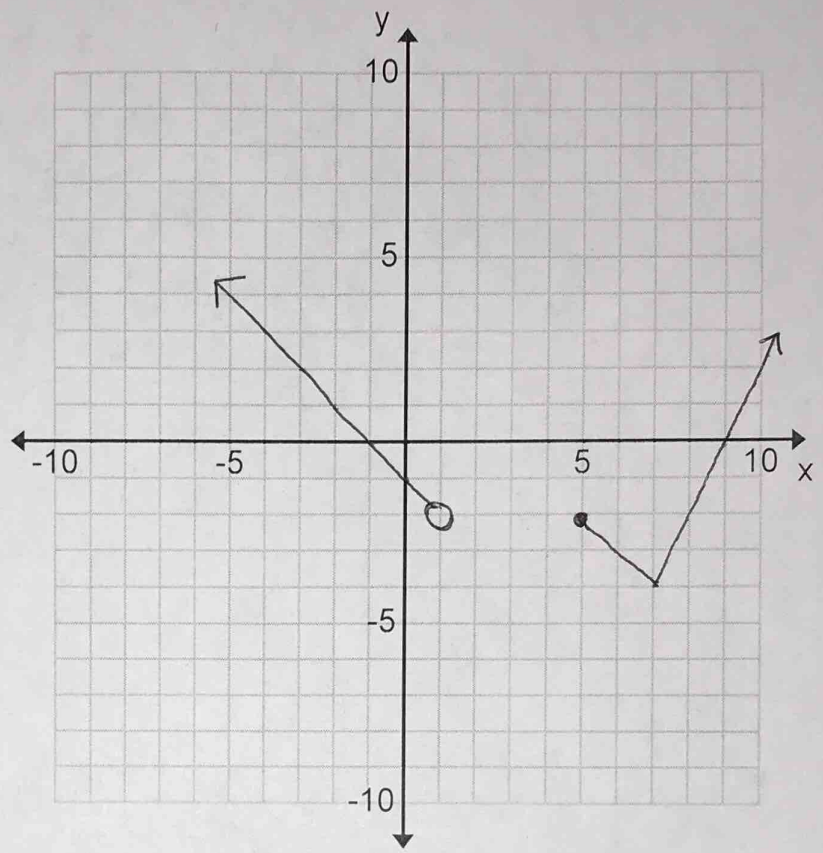
$55



Use the graph to answer the following questions:

1. Domain:

$(-\infty, 1) \cup [5, \infty)$



2. Range:

$[-4, \infty)$

3. X-intercepts:

$(-1, 0)$
$(9, 0)$

4. Y-intercepts:

$(0, -1)$

5. Positive interval(s):

$(-\infty, -1) \cup (9, \infty)$

6. Decreasing Interval(s):

$(-\infty, 1) \cup (5, 7)$

7. Negative Interval(s)

$(-1, 1) \cup [5, 9)$

8. Increasing Interval(s)

$(7, \infty)$