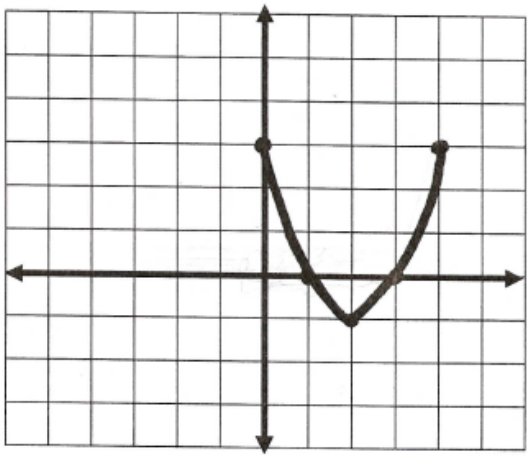
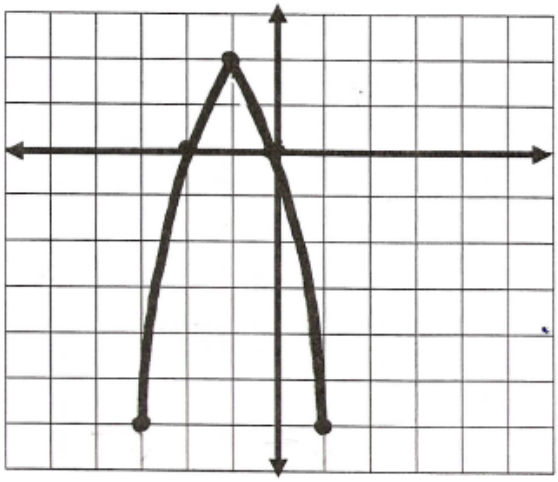
Math 11 **Properties of Parabolas** SOLUTIONS

1.



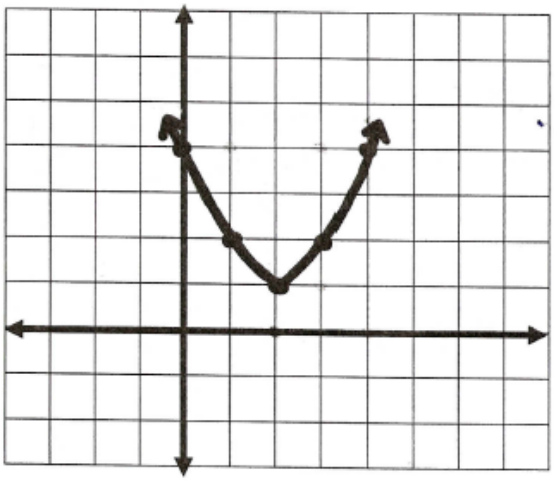
Vertex: (2,-1)
x-intercept(s): (1,0) (3,0)
y-intercept: (0,3)
Maximum or Minimum: Minimum
Max./Min. Value: (2,-1)
Axis of Symmetry: $x=2$
Domain: $\{x \mid 0 \le x \le 4, x \in R\}$
Range: $\{y \mid -1 \le y \le 3, y \in R\}$

2.



Vertex: (-1,2)
x-intercept(s): (0,0) (-2,0)
y-intercept: (0,0)
Maximum or Minimum: Maximum
Max./Min. Value: (-1,2)
Axis of Symmetry: $x=-1$
Domain: $\{x \mid -3 \le x \le 1, x \in R\}$
Range: $\{y \mid -6 \le y \le 2, y \in R\}$

3.



Vertex: (2, 1)

x-intercept(s): No x-intercepts.

y-intercept: (0, 4)

Maximum or Minimum: Minimum

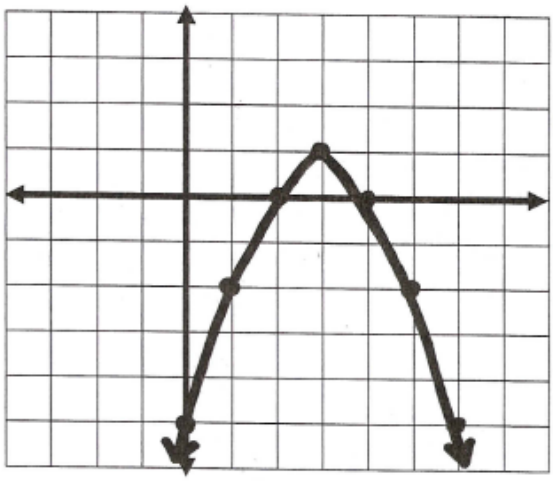
Max./Min. Value: (2, 1)

Axis of Symmetry: $x = 2$

Domain: $\{x \mid x \in R\}$

Range: $\{y \mid y \geq 1, y \in R\}$

4.



Vertex: (3, 1)

x-intercept(s): (2, 0) (4, 0)

y-intercept: (0, -5)

Maximum or Minimum: Maximum

Max./Min. Value: (3, 1)

Axis of Symmetry: $x = 3$

Domain: $\{x \mid x \in R\}$

Range: $\{y \mid y \leq 1, y \in R\}$

5. $y = 2x^2$

Vertex: (0,0)

x-intercept(s): (0,0)

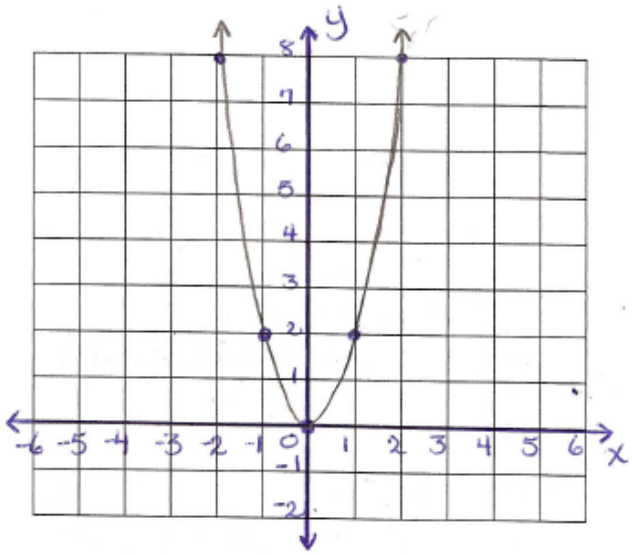
Max./Min. Value: (0,0)

Axis of Symm: $x = 0$

Domain: $\{x \mid x \in R\}$

Range: $\{y \mid y \geq 0, y \in R\}$

x	y
-2	8
-1	2
0	0
1	2
2	8



6. $y = \frac{1}{2}x^2 - 1$

Vertex: (0,-1)

x-intercept(s): Approx. (1.5,0) (-1.5,0)

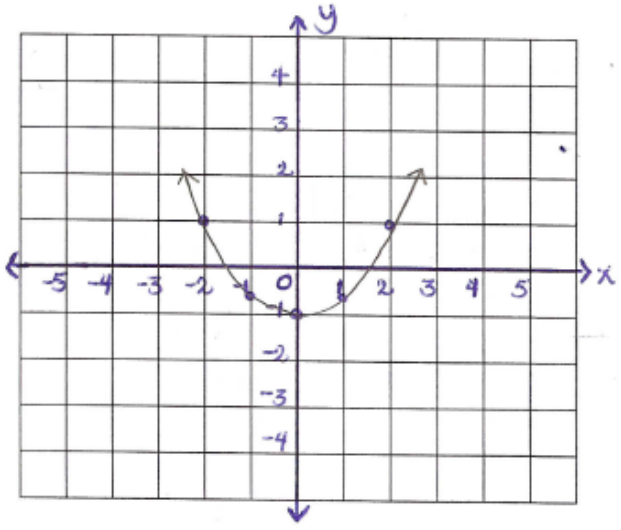
Max./Min. Value: (0,-1)

Axis of Symm: $x = 0$

Domain: $\{x \mid x \in R\}$

Range: $\{y \mid y \geq -1, y \in R\}$

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



7. $y = -(x+1)^2 + 3$

Vertex: $(-1, 3)$

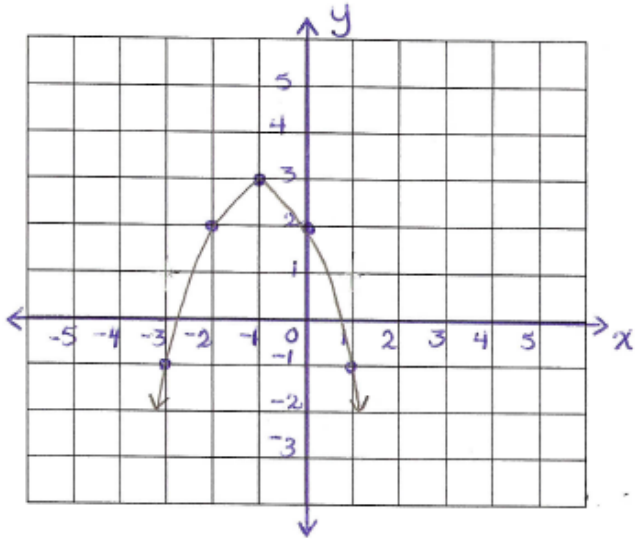
Max./Min. Value: $(-1, 3)$

Axis of Symm: $x = -1$

Domain: $\{x \mid x \in R\}$

Range: $\{y \mid y \leq 3, y \in R\}$

x	y
* -3	-1
-2	2
-1	3
0	2
1	-1
2	-6



8. $y = x^2 - 5x + 4$

Vertex: $(2.5, -2.25)$

x-intercept(s): $(1, 0)$ $(4, 0)$

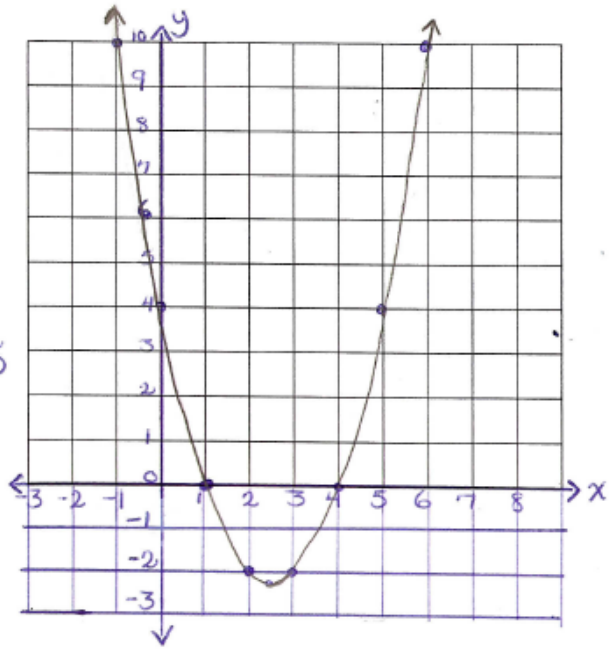
Max./Min. Value: $(2.5, -2.25)$

Axis of Symm: $x = 2.5$

Domain: $\{x \mid x \in R\}$

Range: $\{y \mid y \geq -2.25, y \in R\}$

x	y
-1	10
0	4
1	0
2	-2
2.5	-2.25
3	-2
4	0
5	4
6	10



9. $y = -x^2 + 6x - 5,\ -1 \leq x \leq 7$

Vertex: (3, 4)

x-intercept(s): (1, 0) (5, 0)

Max./Min. Value: (3, 4)

Axis of Symm: $x = 3$

Domain: $\{x \mid -1 \leq x \leq 7, x \in R\}$

Range: $\{y \mid -12 \leq y \leq 4, y \in R\}$

x	y
-1	-12
0	-5
1	0
2	3
3	4
4	3
5	0
6	-5
7	-12