Honors Math II
Unit 4 day 1 Graphing Parabolas

Name Key
Period_____ Date_____

Graph the following Parabolas. Find the indicated information:

1. $y = 3x^2 - 6x + 4$ Vertex: $(1,1)$ Max or Min: Interval of increase or decrease: decrease: $(-\infty, 1]$ increase: $[1, \infty)$ End behavior: $x \to -\infty$ $y \to \infty$ $x \to \infty$ $y \to \infty$	2. $y = 3(x-7)^2 - 1$ Vertex: $(7,-1)$ y-intercept: $(0,146)$ Domain: $\mathbb{R}$ Range: $y \geq -1$
3. $y = -(x+1)(x-3)$ Vertex: $(1,4)$ Max or Min: x-intercept(s): $(-1,0)$ $(3,0)$ y-intercept: $(0,3)$	4. $f(x) = 2(x-5)(x-1)$ Vertex: $(3,-8)$ Max or Min: x-intercept(s): $(5,0)$ $(1,0)$ y-intercept: $(0,10)$
5. $f(x) = -2x^2 - 6x - 3$ Vertex: $(-1.5, 1.5)$ Max or Min: Interval of increase or decrease: increase: $(-\infty, -1.5]$ decrease: $[1.5, \infty)$ End behavior: $x \to -\infty$ $f(x) \to -\infty$ $x \to \infty$ $f(x) \to -\infty$	6. $y = -4(x-2)^2 + 9$ Vertex: $(2,9)$ y-intercept: $(0,-7)$ Domain: $\mathbb{R}$ Range: $(-\infty, 9]$

7. $y = 2(x+2)(x-6)$

Vertex: $(2, -32)$

Max or Min:

x-intercept(s): $(-2, 0)$ $(6, 0)$

y-intercept: $(0, -24)$

8. $f(x) = 4(x-7)(x+2)$

Vertex: $(2.5, -81)$

Max or Min:

x-intercept(s): $(7, 0)$ $(-2, 0)$

y-intercept: $(0, -56)$

9. $y = -(x-2)^2$

Vertex: $(2, 0)$

Max or Min:

Interval of increase or decrease:

increase: $(-\infty, 2]$

decrease: $[2, \infty)$

End behavior:

$x \to -\infty$ $y \to -\infty$

$x \to \infty$ $y \to -\infty$

10. $f(x) = x^2 - 6$

Vertex: $(0, -6)$

Max or Min:

Interval of increase or decrease:

decrease: $(-\infty, 0]$

increase: $[0, \infty)$

End behavior:

$x \to -\infty$ $f(x) \to \infty$

$x \to \infty$ $f(x) \to \infty$

11. $f(x) = \frac{1}{2}x^2 + x - 3$

Vertex: $(-1, -3.5)$

y-intercept: $(0, -3)$

Domain: $\mathbb{R}$

Range: $[-3.5, \infty)$

12. $y = \frac{1}{3}(x+1)^2 - 6$

Vertex: $(-1, -6)$

y-intercept: $(0, -17/3)$

Domain: $\mathbb{R}$

Range: $y \geq \frac{-17}{3}$

13. $y = (x+3)(x-3)$

Vertex: $(0,-9)$

Max or Min:

x-intercept(s): $(-3,0)$ $(3,0)$

y-intercept: $(0,-9)$

14. $f(x) = 2(x+2)(x+6)$

Vertex: $(-4,-8)$

Max or Min:

x-intercept(s): $(-2,0)$ $(-6,0)$

y-intercept: $(0,24)$

15. $y = -(x+4)^2 + 7$

Vertex: $(-4,7)$

Max or Min:

Interval of increase or decrease:

increase: $(-\infty,-4]$

decrease: $[-4,\infty)$

End behavior:

$x \to -\infty$ $y \to -\infty$

$x \to \infty$ $y \to -\infty$

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

Vertex: $(1,6)$

Max or Min:

Interval of increase or decrease:

increase: $(-\infty, 1]$

decrease: $[1,\infty)$

End behavior

$x \to -\infty$ $f(x) \to -\infty$

$x \to \infty$ $f(x) \to -\infty$

17. $y = \frac{2}{3}(x-4)(x+6)$

Vertex: $(-1, -50/3)$

Max or Min:

x-intercept(s): $(4,0)$ $(-6,0)$

y-intercept: $(0,-16)$

18. $y = -\frac{1}{2}(x+2)^2 + 5$

Vertex: $(-2,5)$

Max or Min:

Interval of increase or decrease:

increase: $(-\infty,-2]$

decrease: $[-2,\infty)$

End behavior

$x \to -\infty$ $y \to -\infty$

$x \to \infty$ $y \to -\infty$

Write the equation of the line given the following information.

19. $m = 0$ and passes through $(7, -2)$

horizontal line

$y = -2$

20. Passes through $(-1, -3)$ and $(2, 7)$

$m = \frac{-3-7}{-1-2} = \frac{-10}{-3} = \frac{10}{3}$

$y = \frac{10}{3}(x+1) - 3$ or $y = 10/3(x-2) + 7$

21. Passes through $(4, -2)$ and $(0, 4)$

$m = \frac{-2-4}{4-0} = \frac{-6}{4} = \frac{-3}{2}$

$y = -\frac{3}{2}(x-4) - 2$ or $y = -\frac{3}{2}x + 4$

22. Parallel to the line $2x + 4y = 36$ and passes through $(3, 4)$

$4y = -2x + 36$

$y = -\frac{2}{4}x + 9$

$y = -\frac{1}{2}(x-3) + 4$

23. Perpendicular to the line $y = \frac{2}{3}x + 6$ and passes through $(-2, 4)$

$m = -\frac{3}{2}$

$y = -\frac{3}{2}(x+2) + 4$

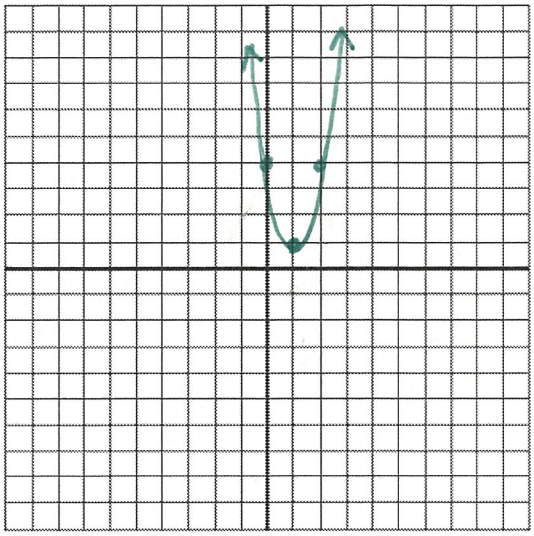
24. Parallel to $y = -3$ and passes through $(4, 5)$

$y = 5$

(4.1)

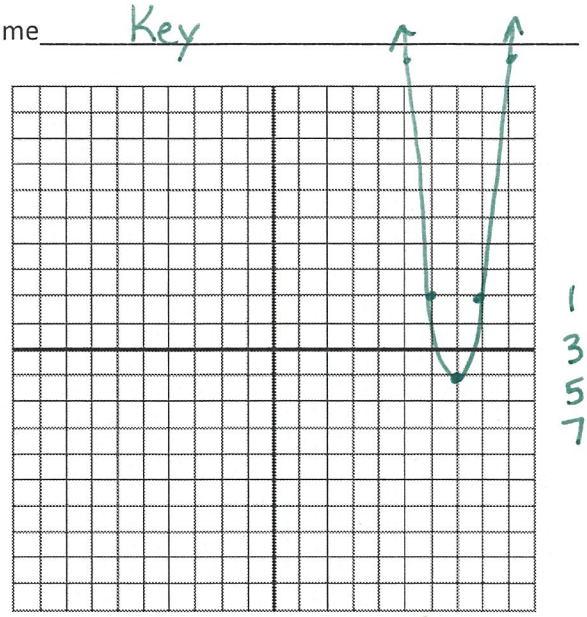
Name Key

#1



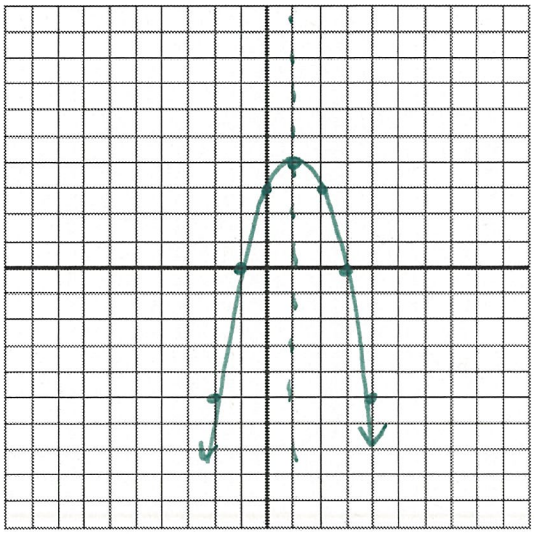
1(3)
3(3)
5(3)
7

#2



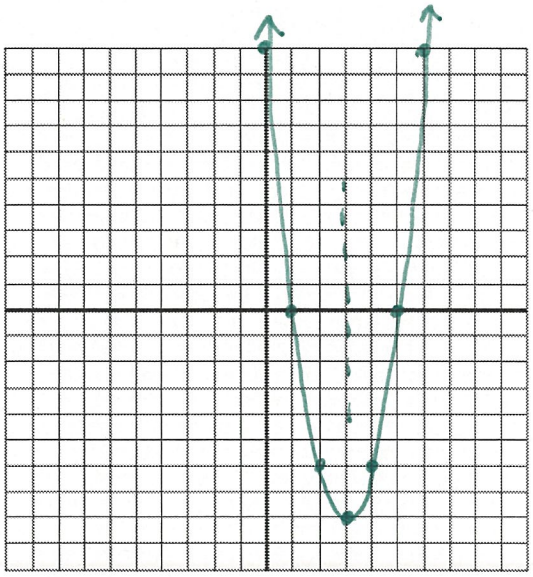
1(3)
3(3)
5
7

#3



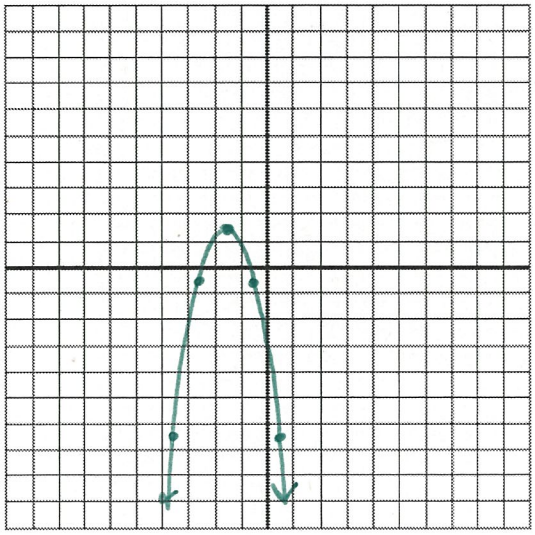
1(-1)
3(-1)
5(-1)
7(-1)

#4



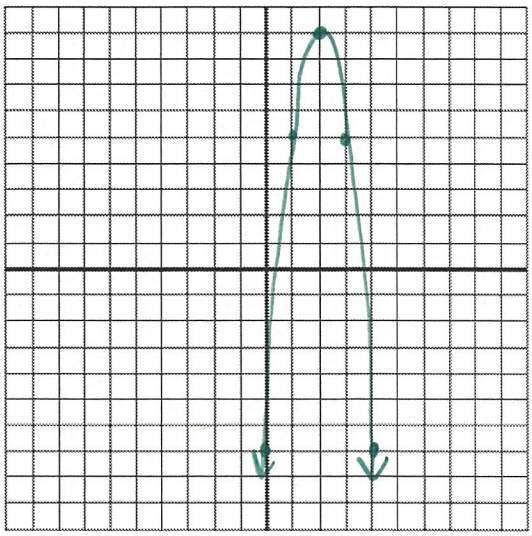
1(2)
3(2)
5(2)
7(2)

#5



1(-2)
3(-2)
5(-2)
7(-2)

#6



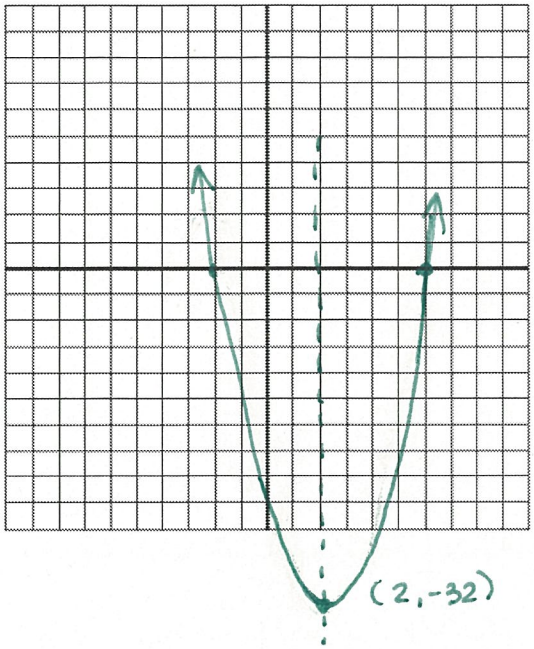
1(-4)
3(-4)
5(-4)
7

(4.1)

Name Key

#7

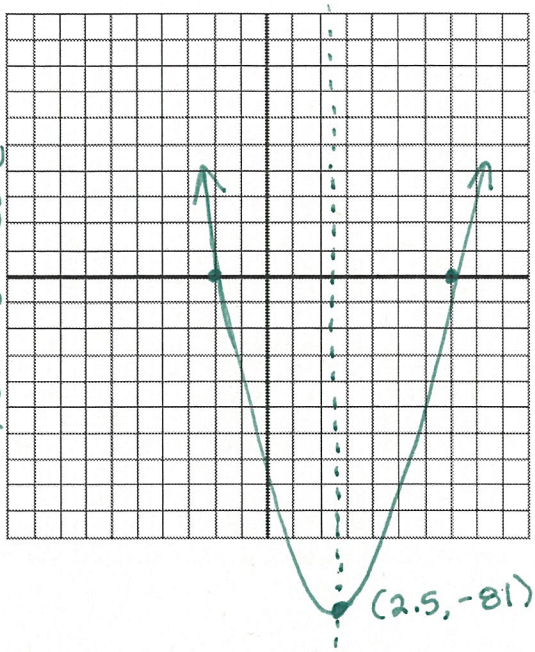
Not to Scale



1(2)
3(2)
5(2)
7

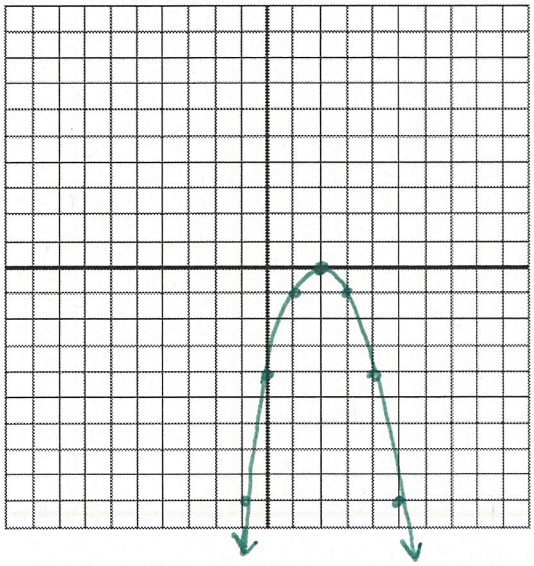
#8

Not to Scale



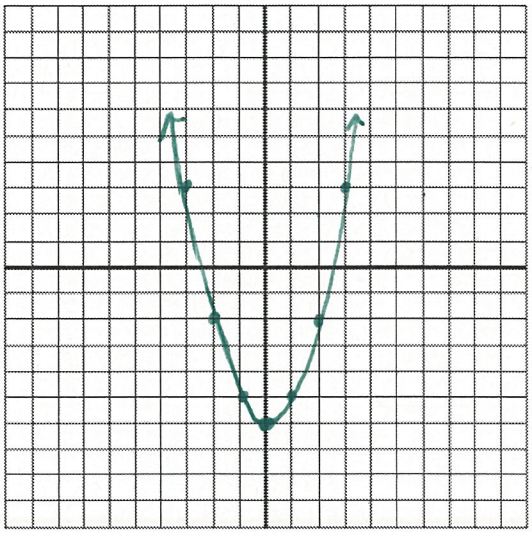
1(4)
3(4)
5(4)
7(4)

#9



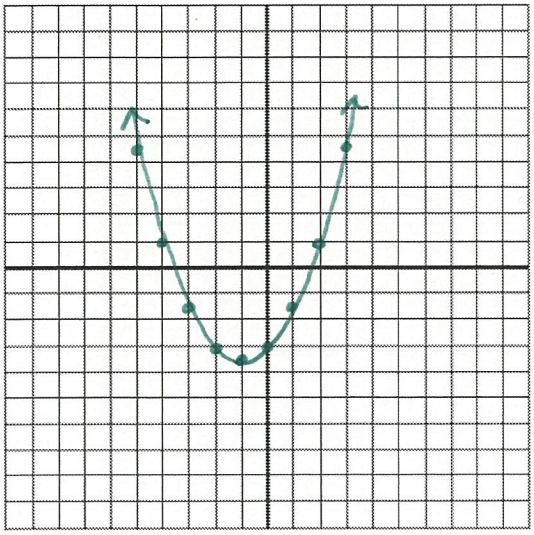
1(-1)
3(-1)
5(-1)
7(-1)

#10



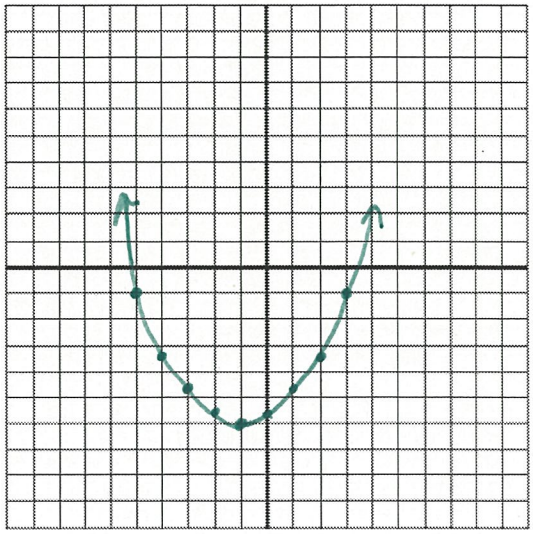
1
3
5
7

#11



1(1/2)
3(1/2)
5(1/2)
7(1/2)

#12

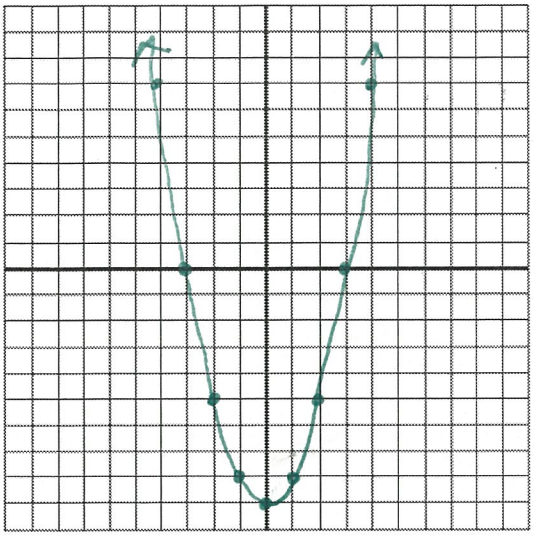


1(1/3) = 1/3
3(1/3) = 1
5(1/3) = 1
7(1/3) = 1

(4.1)

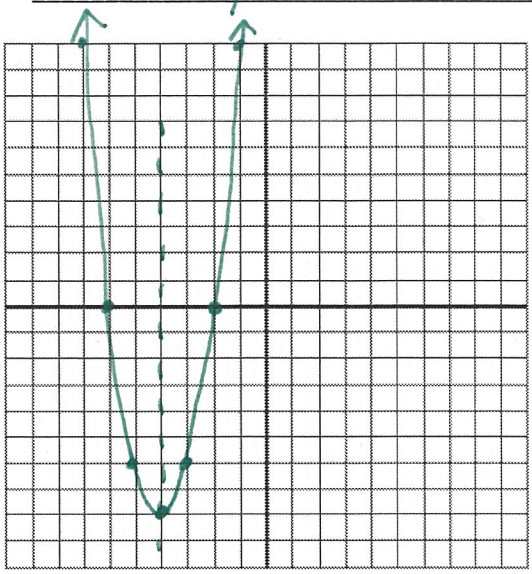
Name Key

#13



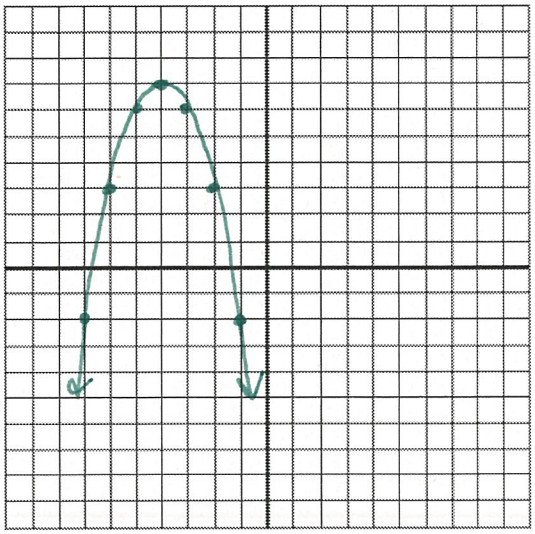
1
3
5
7

#14



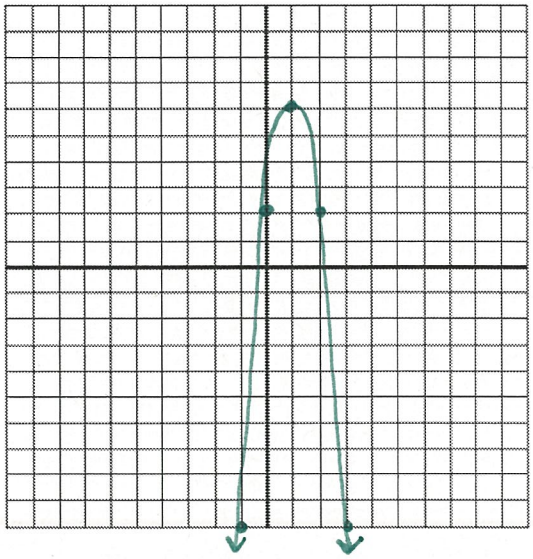
1(2)
3(2)
5(2)
7(2)

#15



1(-1)
3(-1)
5(-1)
7(-1)

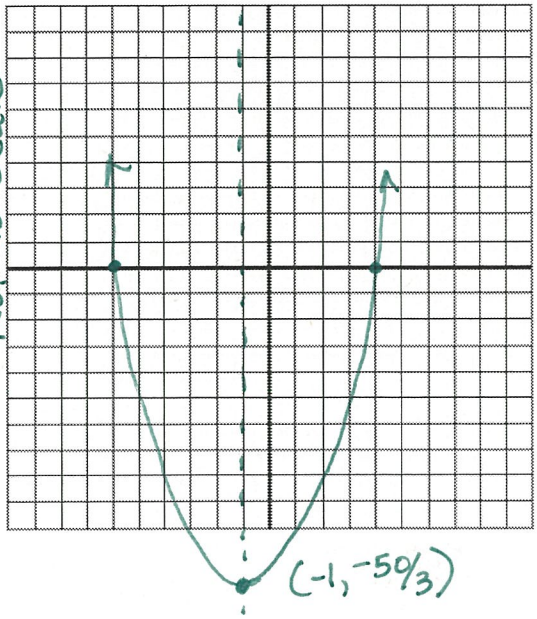
#16



1(-4)
3(-4)
5(-4)
7(-4)

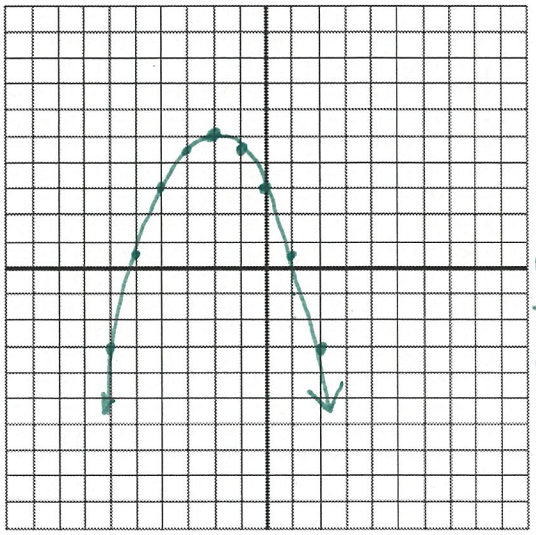
#17

Not to Scale



1(2/3) = 2/3
3(2/3) = 2
5(2/3) = 3 1/3
7(2/3) = 4 2/3

#18



1(-1/2)
3(-1/2)
5(-1/2)
7(-1/2)
9