

Identifying Characteristics Using a Table Name: \_\_\_\_\_

Each table represents a part of the table of a quadratic function. For each function represented, determine the stated characteristics.

- 1. x-intercept(s): \_\_\_\_\_
- y-intercept: \_\_\_\_\_
- vertex: \_\_\_\_\_
- axis of symmetry: \_\_\_\_\_
- extrema: \_\_\_\_\_
- zeros: \_\_\_\_\_
- ROC,  $-3 \leq x \leq 0$ : \_\_\_\_\_

x	-3	-2	-1	0	1	2	3	4
y	9	4	1	0	1	4	9	16

Does this parabola open up or down? \_\_\_\_\_

- 2. x-intercept(s): \_\_\_\_\_
- y-intercept: \_\_\_\_\_
- vertex: \_\_\_\_\_
- axis of symmetry: \_\_\_\_\_
- extrema: \_\_\_\_\_
- zeros: \_\_\_\_\_
- ROC,  $3 \leq x \leq 4$ : \_\_\_\_\_

x	-3	-2	-1	0	1	2	3	4
y	-9	-4	-1	0	-1	-4	-9	-16

Does this parabola open up or down? \_\_\_\_\_

- 3. x-intercept(s): \_\_\_\_\_
- y-intercept: \_\_\_\_\_
- vertex: \_\_\_\_\_
- axis of symmetry: \_\_\_\_\_
- extrema: \_\_\_\_\_
- zeros: \_\_\_\_\_
- ROC,  $-3 \leq x \leq -1$ : \_\_\_\_\_

x	-3	-2	-1	0	1	2	3	4
y	-16	-6	0	2	0	-6	-16	-30

Does this parabola open up or down? \_\_\_\_\_

- 4. x-intercept(s): \_\_\_\_\_
- y-intercept: \_\_\_\_\_
- vertex: \_\_\_\_\_
- axis of symmetry: \_\_\_\_\_
- extrema: \_\_\_\_\_
- zeros: \_\_\_\_\_
- ROC,  $5 \leq x \leq 6$ : \_\_\_\_\_

x	-1	0	1	2	3	4	5	6
y	15	8	3	0	-1	0	3	8

Does this parabola open up or down? \_\_\_\_\_

- 5. x-intercept(s): \_\_\_\_\_
- y-intercept: \_\_\_\_\_
- vertex: \_\_\_\_\_
- axis of symmetry: \_\_\_\_\_
- extrema: \_\_\_\_\_
- zeros: \_\_\_\_\_
- ROC,  $-1 \leq x \leq 1$ : \_\_\_\_\_

x	-2	-1	0	1	2	3	4	5
y	24	15	8	3	0	-1	0	3

Does this parabola open up or down? \_\_\_\_\_

### Practice Problems

6. x-intercept(s): \_\_\_\_\_  
 y-intercept: \_\_\_\_\_  
 vertex: \_\_\_\_\_  
 axis of symmetry: \_\_\_\_\_  
 extrema: \_\_\_\_\_  
 zeros: \_\_\_\_\_  
 ROC,  $-5 \leq x \leq -4$ : \_\_\_\_\_

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

Does this parabola open up or down? \_\_\_\_\_

7. x-intercept(s): \_\_\_\_\_  
 y-intercept: \_\_\_\_\_  
 vertex: \_\_\_\_\_  
 axis of symmetry: \_\_\_\_\_  
 extrema: \_\_\_\_\_  
 zeros: \_\_\_\_\_  
 ROC,  $-4 \leq x \leq -2$ : \_\_\_\_\_

x	-5	-4	-3	-2	-1	0	1	2
y	-18	-8	-2	0	-2	-8	-18	-32

Does this parabola open up or down? \_\_\_\_\_

8. x-intercept(s): \_\_\_\_\_  
 y-intercept: \_\_\_\_\_  
 vertex: \_\_\_\_\_  
 axis of symmetry: \_\_\_\_\_  
 extrema: \_\_\_\_\_  
 zeros: \_\_\_\_\_  
 ROC,  $1 \leq x \leq 3$ : \_\_\_\_\_

x	-3	-2	-1	0	1	2	3	4
y	24	9	0	-3	0	9	24	45

Does this parabola open up or down? \_\_\_\_\_

9. x-intercept(s): \_\_\_\_\_  
 y-intercept: \_\_\_\_\_  
 vertex: \_\_\_\_\_  
 axis of symmetry: \_\_\_\_\_  
 extrema: \_\_\_\_\_  
 zeros: \_\_\_\_\_  
 ROC,  $0 \leq x \leq 1$ : \_\_\_\_\_

x	-3	-2	-1	0	1	2	3	4
y	7	0	-5	-8	-9	-8	-5	0

Does this parabola open up or down? \_\_\_\_\_

10. x-intercept(s): \_\_\_\_\_  
 y-intercept: \_\_\_\_\_  
 vertex: \_\_\_\_\_  
 axis of symmetry: \_\_\_\_\_  
 extrema: \_\_\_\_\_  
 zeros: \_\_\_\_\_  
 ROC,  $-3 \leq x \leq -2$ : \_\_\_\_\_

x	-5	-4	-3	-2	-1	0	1	2
y	24	10	0	-6	-8	-6	0	10

Does this parabola open up or down? \_\_\_\_\_

Review: Find the following characteristics for the quadratic  $y = -2(x + 8)^2 + 18$ .

Vertex: \_\_\_\_\_ solutions: \_\_\_\_\_  
 AOS: \_\_\_\_\_ x-intercept: \_\_\_\_\_  
 Extrema: \_\_\_\_\_ zeros: \_\_\_\_\_  
 y-intercept: \_\_\_\_\_ ROC,  $-4 \leq x \leq -2$ : \_\_\_\_\_

Identifying Characteristics Using a Table Name: Key

Each table represents a part of the table of a quadratic function. For each function represented, determine the stated characteristics.

1. x-intercept(s): (0,0)  
 y-intercept: (0,0)  
 vertex: (0,0)  
 axis of symmetry: X=0  
 extrema: min at 0  
 zeros: 0  
 ROC,  $-3 \leq x \leq 0$ : -3

x	-3	-2	-1	0	1	2	3	4
y	9	4	1	0	1	4	9	16

Does this parabola open up or down? up

$$\frac{0-9}{0-3} = \frac{-9}{-3} = 3$$

2. x-intercept(s): (0,0)  
 y-intercept: (0,0)  
 vertex: (0,0)  
 axis of symmetry: X=0  
 extrema: max at 0  
 zeros: 0  
 ROC,  $3 \leq x \leq 4$ : -7

x	-3	-2	-1	0	1	2	3	4
y	-9	-4	-1	0	-1	-4	-9	-16

Does this parabola open up or down? down

$$\frac{-16-9}{4-3} = \frac{-25}{1} = -25$$

3. x-intercept(s): (-1,0), (1,0)  
 y-intercept: (0,2)  
 vertex: (0,2)  
 axis of symmetry: X=0  
 extrema: max at 2  
 zeros: -1, 1  
 ROC,  $-3 \leq x \leq -1$ : 8

x	-3	-2	-1	0	1	2	3	4
y	-16	-6	0	2	0	-6	-16	-30

Does this parabola open up or down? down

$$\frac{0-16}{-1-3} = \frac{-16}{-4} = 4$$

4. x-intercept(s): (2,0), (4,0)  
 y-intercept: (0,8)  
 vertex: (3,-1)  
 axis of symmetry: X=3  
 extrema: min at -1  
 zeros: 2, 4  
 ROC,  $5 \leq x \leq 6$ : 5

x	-1	0	1	2	3	4	5	6
y	15	8	3	0	-1	0	3	8

Does this parabola open up or down? up

$$\frac{8-3}{0-5} = \frac{5}{-5} = -1$$

5. x-intercept(s): (2,0), (4,0)  
 y-intercept: (0,8)  
 vertex: (3,-1)  
 axis of symmetry: X=3  
 extrema: min at -1  
 zeros: 2, 4  
 ROC,  $-1 \leq x \leq 1$ : -6

x	-2	-1	0	1	2	3	4	5
y	24	15	8	3	0	-1	0	3

Does this parabola open up or down? up

$$\frac{3-15}{1-1} = \frac{-12}{2} = -6$$



**Practice Problems**

6. x-intercept(s):  $(-3,0), (1,0)$   
 y-intercept:  $(0,-3)$   
 vertex:  $(-1,-4)$   
 axis of symmetry:  $X=-1$   
 extrema: min at -4  
 zeros:  $-3, 1$   
 ROC,  $-5 \leq x \leq -4$ :  $-7$

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

Does this parabola open up or down? up

$$\frac{5-12}{-4-(-5)} = \frac{-7}{1} = -7$$

7. x-intercept(s):  $(-2,0)$   
 y-intercept:  $(0,-8)$   
 vertex:  $(-2,0)$   
 axis of symmetry:  $X=-2$   
 extrema: max at 0  
 zeros:  $-2$   
 ROC,  $-4 \leq x \leq -2$ :  $4$

x	-5	-4	-3	-2	-1	0	1	2
y	-18	-8	-2	0	-2	-8	-18	-32

Does this parabola open up or down? down

$$\frac{0-(-8)}{-2-(-4)} = \frac{8}{2} = 4$$

8. x-intercept(s):  $(-1,0), (1,0)$   
 y-intercept:  $(0,-3)$   
 vertex:  $(0,-3)$   
 axis of symmetry:  $X=0$   
 extrema: min at -3  
 zeros:  $-1, 1$   
 ROC,  $1 \leq x \leq 3$ :  $12$

x	-3	-2	-1	0	1	2	3	4
y	24	9	0	-3	0	9	24	45

Does this parabola open up or down? up

$$\frac{24-0}{3-1} = \frac{24}{2} = 12$$

9. x-intercept(s):  $(-2,0), (4,0)$   
 y-intercept:  $(0,-8)$   
 vertex:  $(1,-9)$   
 axis of symmetry:  $X=1$   
 extrema: min at -9  
 zeros:  $-2, 4$   
 ROC,  $0 \leq x \leq 1$ :  $-1$

x	-3	-2	-1	0	1	2	3	4
y	7	0	-5	-8	-9	-8	-5	0

Does this parabola open up or down? up

$$\frac{-9-8}{1-0} = \frac{-17}{1} = -1$$

10. x-intercept(s):  $(-3,0), (1,0)$   
 y-intercept:  $(0,-6)$   
 vertex:  $(-1,-8)$   
 axis of symmetry:  $X=-1$   
 extrema: min at -8  
 zeros:  $-3, 1$   
 ROC,  $-3 \leq x \leq -2$ :  $-6$

x	-5	-4	-3	-2	-1	0	1	2
y	24	10	0	-6	-8	-6	0	10

Does this parabola open up or down? up

$$\frac{-6-0}{-2-(-3)} = \frac{-6}{1} = -6$$

**Review:** Find the following characteristics for the quadratic  $y = -2(x+8)^2 + 18$ .

Vertex:  $(-8, 18)$

solutions:  $-5, -11$

$$y = -2(x+8)^2 + 18 \quad 0 = -2(x+8)^2 + 18$$

AOS:  $X = -8$

x-intercept:  $(-5, 0), (-11, 0)$

$$= -2(8)^2 + 18 \quad -18 = -2(x+8)^2$$

Extrema: max at 18

zeros:  $-5, -11$

$$= -2(64) + 18 \quad 9 = (x+8)^2$$

y-intercept:  $(0, -110)$

ROC,  $-4 \leq x \leq -2$ :  $-20$

$$= -128 + 18 \quad \pm 3 = x+8$$

$$= -110$$

$$-8 \pm 3 = x$$

$$\begin{aligned} a &= -4 \\ b &= -2 \\ f(a) &= -14 \\ f(b) &= -54 \end{aligned}$$

$$\begin{aligned} \frac{-54 - (-14)}{-2 - (-4)} &= \frac{-40}{2} = -20 \end{aligned}$$

$$\boxed{-5, -11 = x}$$