

Comparing Linear and Quadratic Functions

Calculate the first and second differences for each table of values. Describe the type of function represented by the table.

1)

| x  | y  | First Differences | Second Differences |
|----|----|-------------------|--------------------|
| -2 | -6 | 3                 |                    |
| -1 | -3 | 3                 | 0                  |
| 0  | 0  | 3                 | 0                  |
| 1  | 3  | 3                 | 0                  |
| 2  | 6  | 3                 |                    |

The function represented by the table is a linear function.

2)

| x  | y  | First Differences | Second Differences |
|----|----|-------------------|--------------------|
| -2 | 12 |                   |                    |
| -1 | 3  |                   |                    |
| 0  | 0  |                   |                    |
| 1  | 3  |                   |                    |
| 2  | 12 |                   |                    |

3)

| x  | y | First Differences | Second Differences |
|----|---|-------------------|--------------------|
| -3 | 3 |                   |                    |
| -2 | 4 |                   |                    |
| -1 | 5 |                   |                    |
| 0  | 6 |                   |                    |
| 1  | 7 |                   |                    |

4)

| x  | y  | First Differences | Second Differences |
|----|----|-------------------|--------------------|
| -1 | 1  |                   |                    |
| 0  | 0  |                   |                    |
| 1  | 3  |                   |                    |
| 2  | 10 |                   |                    |
| 3  | 21 |                   |                    |

5)

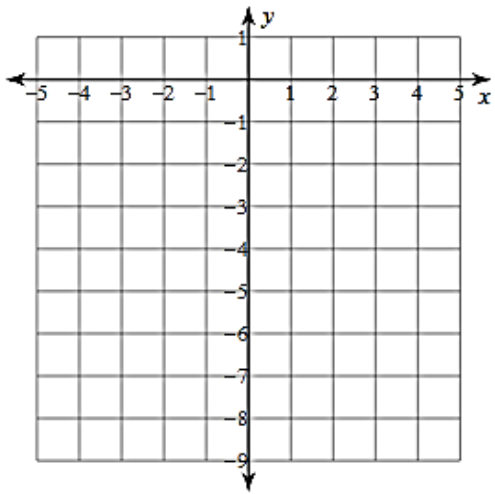
| x  | y   | First Differences | Second Differences |
|----|-----|-------------------|--------------------|
| -4 | -48 |                   |                    |
| -3 | -27 |                   |                    |
| -2 | -12 |                   |                    |
| -1 | -3  |                   |                    |
| 0  | 0   |                   |                    |

6)

| x  | y  | First Differences | Second Differences |
|----|----|-------------------|--------------------|
| -1 | 10 |                   |                    |
| 0  | 8  |                   |                    |
| 1  | 6  |                   |                    |
| 2  | 4  |                   |                    |
| 3  | 2  |                   |                    |

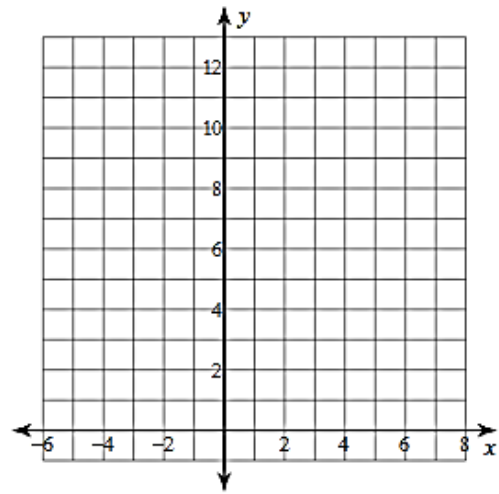
Graph each quadratic function and determine the vertex of the parabola.

7)  $y = -2x^2$

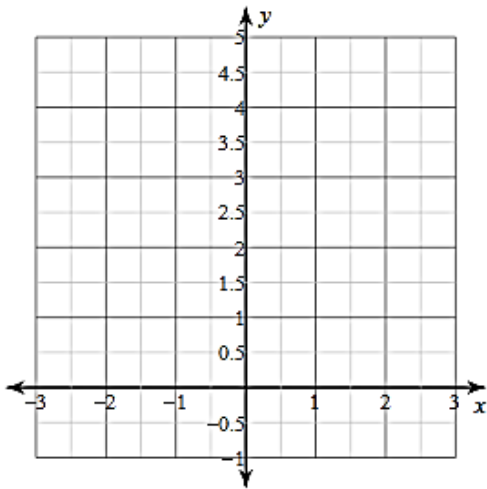


| x  | y |
|----|---|
| -2 |   |
| -1 |   |
| 0  |   |
| 1  |   |
| 2  |   |

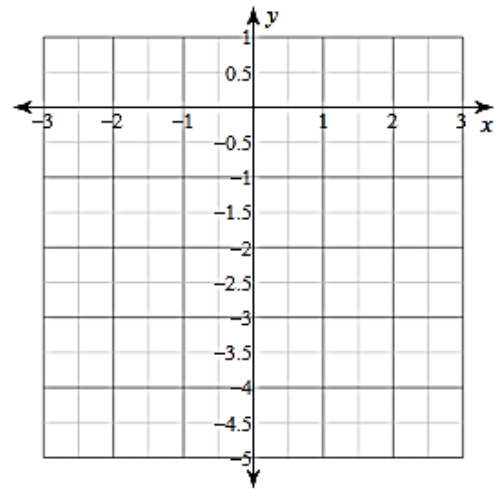
8)  $y = 3x^2$



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

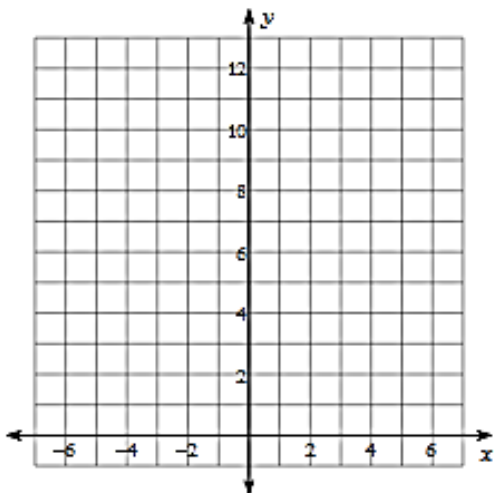


| x  | y |
|----|---|
| -2 |   |
| -1 |   |
| 0  |   |
| 1  |   |
| 2  |   |



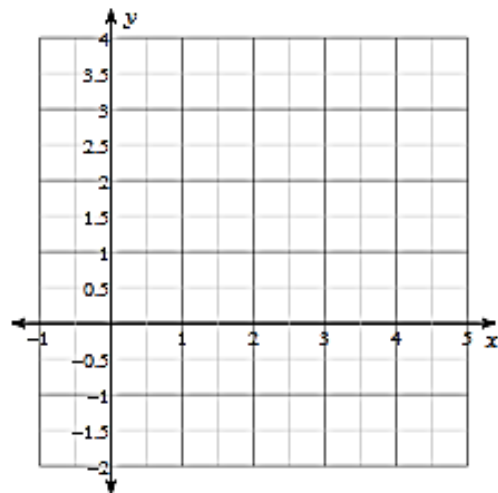
| x  | y |
|----|---|
| -2 |   |
| -1 |   |
| 0  |   |
| 1  |   |
| 2  |   |

11)  $y = x^2 + 4$



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

12)  $y = x^2 - 2x$



| x  | y |
|----|---|
| -1 |   |
| 0  |   |
| 1  |   |
| 2  |   |
| 3  |   |