# Algebra 1A Homework 4.3 Question #7

Example #1

(0, 0) (1, 4) (2, 16) (3, 36) (4, 64)

List the ordered pairs in a table.

|  |  |
| --- | --- |
| x | y |
| 0 | 0 |
| 1 | 4 |
| 2 | 16 |
| 3 | 36 |
| 4 | 64 |

The patterns in Lesson 4-3 seem to be either linear, quadratic (x2), or cubic (x3). We can easily see that the y-values in this pattern are not increasing in a linear way. So we can try quadratic first. Then if we need to, we’ll try cubic.

|  |  |  |
| --- | --- | --- |
| x | y | x2 |
| 0 | 0 | 0 |
| 1 | 4 | 1 |
| 2 | 16 | 4 |
| 3 | 36 | 9 |
| 4 | 64 | 16 |

Compare the values in the y-column with values in the x2-column. Notice that if we multiply each of the x2-values by 4, we get exactly the y-values. So the function we’re looking for is y = 4x2.

|  |  |  |  |
| --- | --- | --- | --- |
| x | y | x2 | 4x2 |
| 0 | 0 | 0 | 0 |
| 1 | 4 | 1 | 4 |
| 2 | 16 | 4 | 16 |
| 3 | 36 | 9 | 36 |
| 4 | 64 | 16 | 64 |

Example #2

(0, 0) (1, 3) (2, 12) (3, 27) (4, 48)

List the ordered pairs in a table.

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

The patterns in Lesson 4-3 seem to be either linear, quadratic (x2), or cubic (x3). We can easily see that the y-values in this pattern are not increasing in a linear way. So we can try quadratic first. Then if we need to, we’ll try cubic.

|  |  |  |
| --- | --- | --- |
| x | y | x2 |
| 0 | 0 | 0 |
| 1 | 3 | 1 |
| 2 | 12 | 4 |
| 3 | 27 | 9 |
| 4 | 48 | 16 |

Compare the values in the y-column with the values in the x2-column. Notice that if we multiply each of the x2-values by 3, we get exactly the y-values. So the function we’re looking for is y = 3x2.

|  |  |  |  |
| --- | --- | --- | --- |
| x | y | x2 | 3x2 |
| 0 | 0 | 0 | 0 |
| 1 | 3 | 1 | 3 |
| 2 | 12 | 4 | 12 |
| 3 | 27 | 9 | 27 |
| 4 | 48 | 16 | 48 |

Example #3

(0, 0) (1, 5) (2, 40) (3, 135) (4, 320)

List the ordered pairs in a table.

|  |  |
| --- | --- |
| x | y |
| 0 | 0 |
| 1 | 5 |
| 2 | 40 |
| 3 | 135 |
| 4 | 320 |

The patterns in Lesson 4-3 seem to be either linear, quadratic (x2), or cubic (x3). We can easily see that the y-values in this pattern are not increasing in a linear way. So we can try quadratic first. Then if we need to, we’ll try cubic.

|  |  |  |
| --- | --- | --- |
| x | y | x2 |
| 0 | 0 | 0 |
| 1 | 5 | 1 |
| 2 | 40 | 4 |
| 3 | 135 | 9 |
| 4 | 320 | 16 |

Compare the values in the y-column with the values in the x2-column. There is not one constant number that we can multiply the x2-values with in order to get the y-values. At this point we should try the cubic function instead.

|  |  |  |  |
| --- | --- | --- | --- |
| x | y | x2 | x3 |
| 0 | 0 | 0 | 0 |
| 1 | 5 | 1 | 1 |
| 2 | 40 | 4 | 8 |
| 3 | 135 | 9 | 27 |
| 4 | 320 | 16 | 48 |

(Continued…)

(Example #3 continued)

Now compare the values in the y-column with the values in the x3-column. Notice that if we multiply each of the x3-values by 5, we get exactly the y-values. So the function we’re looking for is y = 5x3.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x | y | x2 | x3 | 5x3 |
| 0 | 0 | 0 | 0 | 0 |
| 1 | 5 | 1 | 1 | 5 |
| 2 | 40 | 4 | 8 | 40 |
| 3 | 135 | 9 | 27 | 135 |
| 4 | 320 | 16 | 48 | 320 |