

# [Relations and functions](https://assignbuster.com/relations-and-functions/)

[Science](https://assignbuster.com/essay-subjects/science/), [Mathematics](https://assignbuster.com/essay-subjects/science/mathematics/)

Week Five Discussion: Relations and Functions The first equation, I have selected is f(x) = 4. The points on the graph of the first equation are (-7, 4), (-5, 4), (-3, 4), (-1, 4), (0, 4), (1, 4), (3, 4), (5, 4) and (7, 4). The equation does not involve any x-term; therefore, y value is same for all the points.
There is no x-intercept. The y-intercept is 4 that is at (0, 4). As such, there is no start/end point. This is because the graph of the equation goes to infinity (-∞ or +∞) both sides (left and right) of the y-axis.
The graph of the equation is a horizontal line 4 units above the x-axis and is located on I and II quadrants.
The domain (D) for the first equation is the set of all real numbers. In interval notation, this can be written as
D = (-∞, ∞)
The range (R) for the first equation is 4. In interval notation, this can be written as
R = [4]
The equation f(x) = 4 is a function as it passes the vertical line test.
The second equation, I have selected is x = (y + 2)^2. The calculations for the points on the graph are given below:
For y = 1, x = (1 + 2)^2 = (3)^2 = 9
For y = 0, x = (0 + 2)^2 = (2)^2 = 4
For y = -1, x = (-1 + 2)^2 = (1)^2 = 1
For y = -2, x = (1 + 2)^2 = (0)^2 = 0
For y = -3, x = (-3 + 2)^2 = (-1)^2 = 1
For y = -4, x = (-4 + 2)^2 = (-2)^2 = 4
For y = -5, x = (-5 + 2)^2 = (-3)^2 = 9
The points on the graph of the first equation are (9, 1), (4, 0), (1, -1), (0, -2), (1, -3), (4, -4) and (9, -5).
The x-intercept is 4 that is at (4, 0) and the y-intercept is -2 that is at (0, -2). The vertex is at (0, -2). As such, there is no start/end point. This is because the graph of the equation goes to positive infinity (+∞) both sides (up and down) of the x-axis and intercept the y-axis at (0, -2).
The graph of the equation is a parabola and is located on I and IV quadrants.
The domain (D) for the second equation is the set of all real numbers greater or equal to 0. In interval notation, this can be written as
D = [0, ∞)
The range (R) for the second equation is the set of all real numbers. In interval notation, this can be written as
R = (-∞, ∞)
The equation x = (y + 2)^2 is a relation as it does not pass the vertical line test.
I selected transformation of the first equation, f(x) = 4. When the equation is shifted three units upward, the new equation would be
f(x) = 4 + 3 = 7
And now shifting four points to the left the resulting equation would be
f(x) = 7(no change in the equation, as there is no x-term)
If the first equation, f(x) = 4 is shifted three units upward and four points to the left, the resulting transformed equation would be f(x) = 7. There is no x-intercept and the y-intercept is 7 that is at (0, 7).