In terms of engineering, polynomials and rational functions can help tremendously with architecture. This includes the design of what is being built, getting the estimations correct of the sizes, angles and amount of building materials that would need to be utilized, etc. It is the best way to cut down on guesswork and estimate with accuracy through the use of rational functions and polynomials. As an example:

You own a house, but you would like to put up a fence around your front porch to keep your dog from running towards the driveway when you have visitors parking there. This would involve a square of fencing, the northernmost side of which would be the front wall of your house, connecting to your front door. The southernmost side would be running parallel to the front wall of your house where the main entrance is and would also be facing your driveway, with a small gate to allow visitors to pass through the fence while keeping your dog at bay and safe. The eastern and western sides are just plain fencing. So this would require you to fence up 3 sides attached to your front house wall. To enclose the 3 sides, you will need to calculate how much fencing would need to be purchased. This involves using a formula that takes into account the size of the front house wall that the fence is being built perpendicular and parallel to. The area of the rectangle is equal to the length times the width so x=l\*w and if the front house wall is 50 meters, we can estimate that the southernmost side should also be 50 meters. And say 200 meters of fencing is bought; we can calculate how much fencing should be put on the sides. f(x) = -2x ^ 2 + 200x.



The graph indicates the maximum values for the area that needs to be enclosed, which can be deduced as the vertex points. Finding the vertex by formula is as follows:

h = -b / 2a

h = -200 / 2 x-2

h = 50

k = a x 50

k = 5000

So as calculated here, if the two sides are 50 meters, the other sides must be 100 meters each to reach the area calculated in our example above.

Total Words (385)