



Learning journal unit 2

College Algebra (University of the People)

UNIVERSITY OF THE PEOPLE

GROUP 0013

WEEK 2 UNIT 2

MATH 1201

COLLEGE ALGEBRA

ACADEMIC YEAR 2022 TERM 1

LEARNING JOURNAL

TOPIC: GRAPHS, LINEAR AND QUADRATIC FUNCTIONS

The shape of a quadratic curve takes the form of a parabola which is one my favorite I love about all this kind of Linear and Quadratic functions.

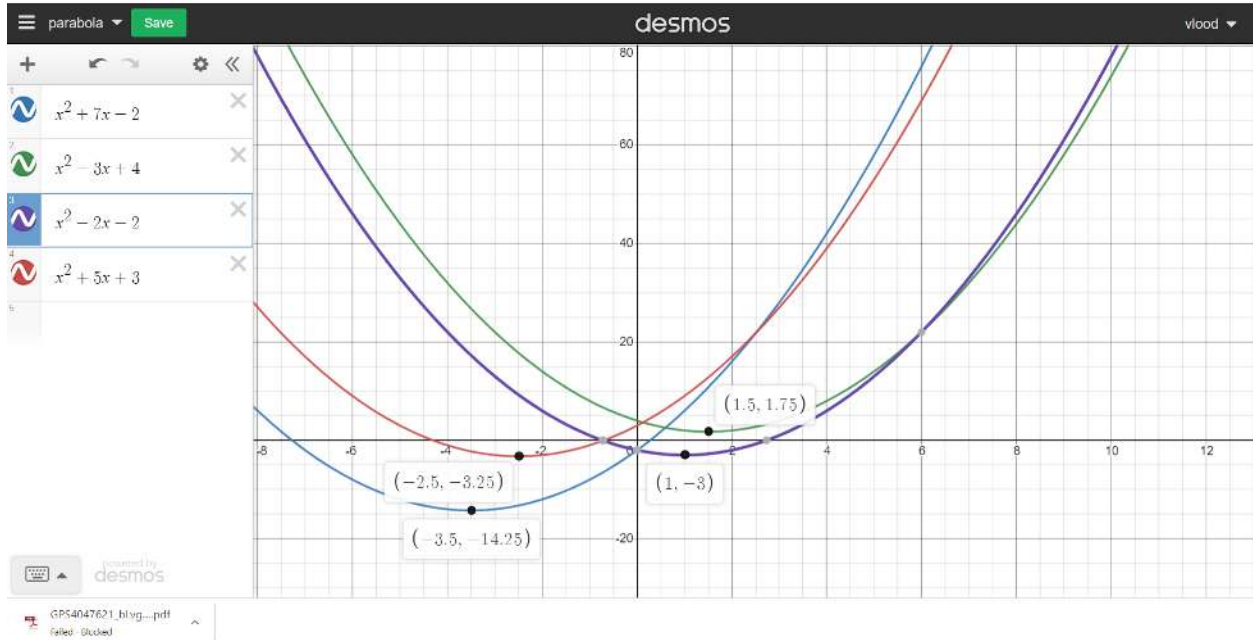
Especially when it appear in the form of a U-Shaped figure it's so beautiful. I have come know that quadratic functions includes a term that contains the square of the independent variable, like x^2 .

There can be no higher power of x in the quadratic function. Examples of quadratic functions include x^2+7x-2 ,

$$x^2-3x+4,$$

$$x^2-2x-2,$$

$$x^2+5x+3,$$



<https://www.desmos.com/calculator/aynogespov>

The above are few of some of the example that comes my mind and I will like to demonstrate them on the attached graph as well

One important feature of the quadratic graphs is that it has an extreme point, called the vertex. If the parabola of the quadratic graph opens up, the vertex represents the lowest point on the graph, or the minimum value of the quadratic function. As shown by my graph, If the parabola opens down, the vertex represents the highest point on the graph, or the maximum value. The Quadratic graph is also symmetric with a vertical line drawn through the vertex, called the axis of symmetry.

The general form of a quadratic function presents the function in the form

$$f(x) = ax^2 + bx + c$$

Where **a**, **b**, and **c** are real numbers and $a \neq 0$. If $a > 0$, the parabola opens upward.

If $a < 0$, the parabola opens downward.

Just like other functions, quadratic equations also have Domains. The domain of any quadratic function is all real numbers unless the context of the function presents some restrictions. Quadratic equations also have range associated with them.

The range of a quadratic function can written in standard form $f(x) = a(x - h)^2 + k$ with a positive a value is $f(x) \geq k$; the range of a quadratic function written in standard form with a negative a value is $f(x) \leq k$.

What concepts (only the names) did you need to accommodate the concept of lines and quadratic functions in your mind?

Vertex

Parabola

Axis of symmetry

x-intercept

y-intercept

Domain

Range

Maximum Value

Minimum Value

What are the simplest line and quadratic function you can imagine?

$$F(x) = x^2 - 2x + 1.$$

In your day to day, is there any occurring fact that can be interpreted as lines and quadratic functions?

Skipping rope can be a sample that comes my mind as one can model it as a quadratic function, like height as a function of the time or the number of jumps performed in a time scope.

Just like a ball can bounce from the ground to produce similar outcome.

What strategy are you using to get the graph of lines and quadratic functions?

I have been using the Desmos Online graphing tool to get the graphs of quadratic functions, I have come to love the use of desmos even for offline usage draw using any domain and get the corresponding range and intercepts.

The tools is effective and efficient on this purposes since I can even use it offline and make my understanding for the course much easier.

Reference:

Abramson, J. (2017). Algebra and trigonometry. OpenStax, TX: Rice University. Retrieved on 11/09/21 from <https://openstax.org/details/books/algebra-and-trigonometry>

Desmos. (n.d). Parabola. Retrieved on 15/ 09/ 21 from <https://www.desmos.com/calculator/aynogespow>