# MAT102 - College Algebra - Polynomial and Rational Functions

3.1 Quadratic Functions and Applications [1]

Miraj Samarakkody

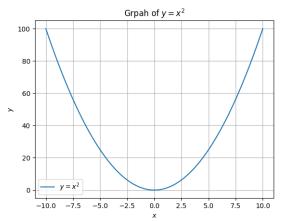
Tougaloo College

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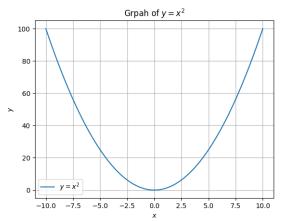
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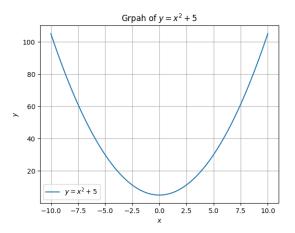
- A function of the form  $f(x) = mx + c \ (m \neq 0)$  is a linear function.
- ► The function defined by  $f(x) = ax^2 + bx + c$  ( $a \neq 0$ ) is called a **quadratic function**.

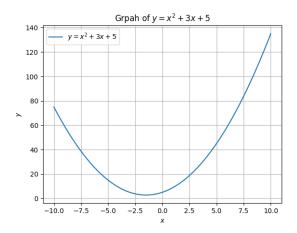
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A function defined by  $f(x) = ax^2 + bx + c$  ( $a \ne 0$ ) is called a **quadratic function**. By completing the square, f(x) can be expressed in **vertex form** as  $f(x) = a(x - h)^2 + k$ .

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- ▶ The axis of symmetry is x = h. This is the vertical line that passes through the vertex.

Give 
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,

1. Determine whether the graph of the parabola opens upward or downward.

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- 7. Determine the maximum or minimum value of f.

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- 7. Determine the maximum or minimum value of f.
- 8. Write down the domain and range in interval notaion.

#### References



Julie Miller and Donna Gerken.

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McGraw-Hill Education, New York, 2nd edition, 2016.