Vocabulary of a Quadratic Function

- Quadratic functions are polynomial equations that have an x^2 in the equation and **2** is the highest exponent of x.

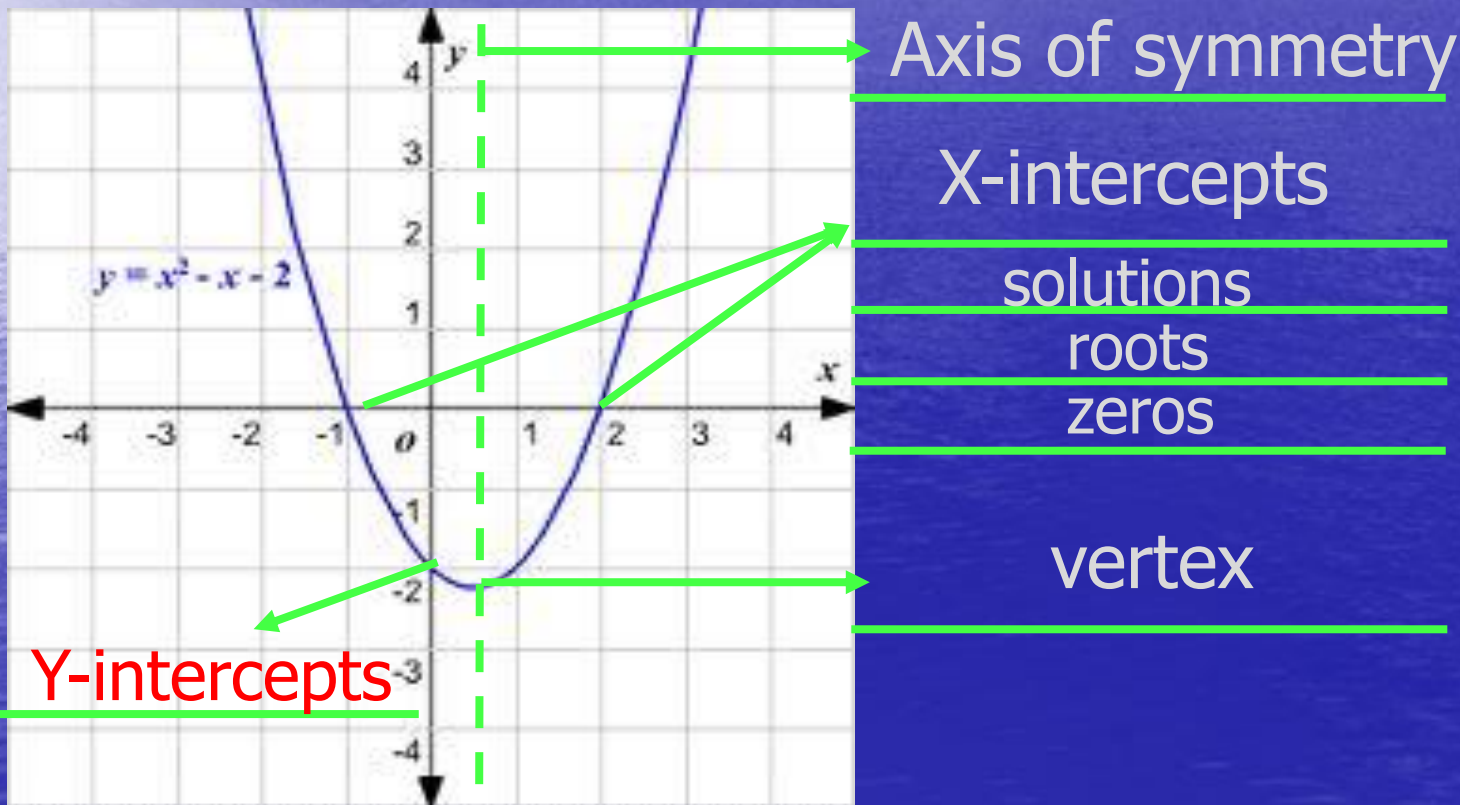- The standard form of a quadratic equation is :

$$y = ax^2 + bx + c$$

Graph

- The graph of a quadratic equation is a __**parabola**__ . That looks like:

- We say: __**Opens down**__ or __**Opens up**__

Parts of a Quadratic Graph

Axis of symmetry

X-intercepts

solutions

roots

zeros

vertex

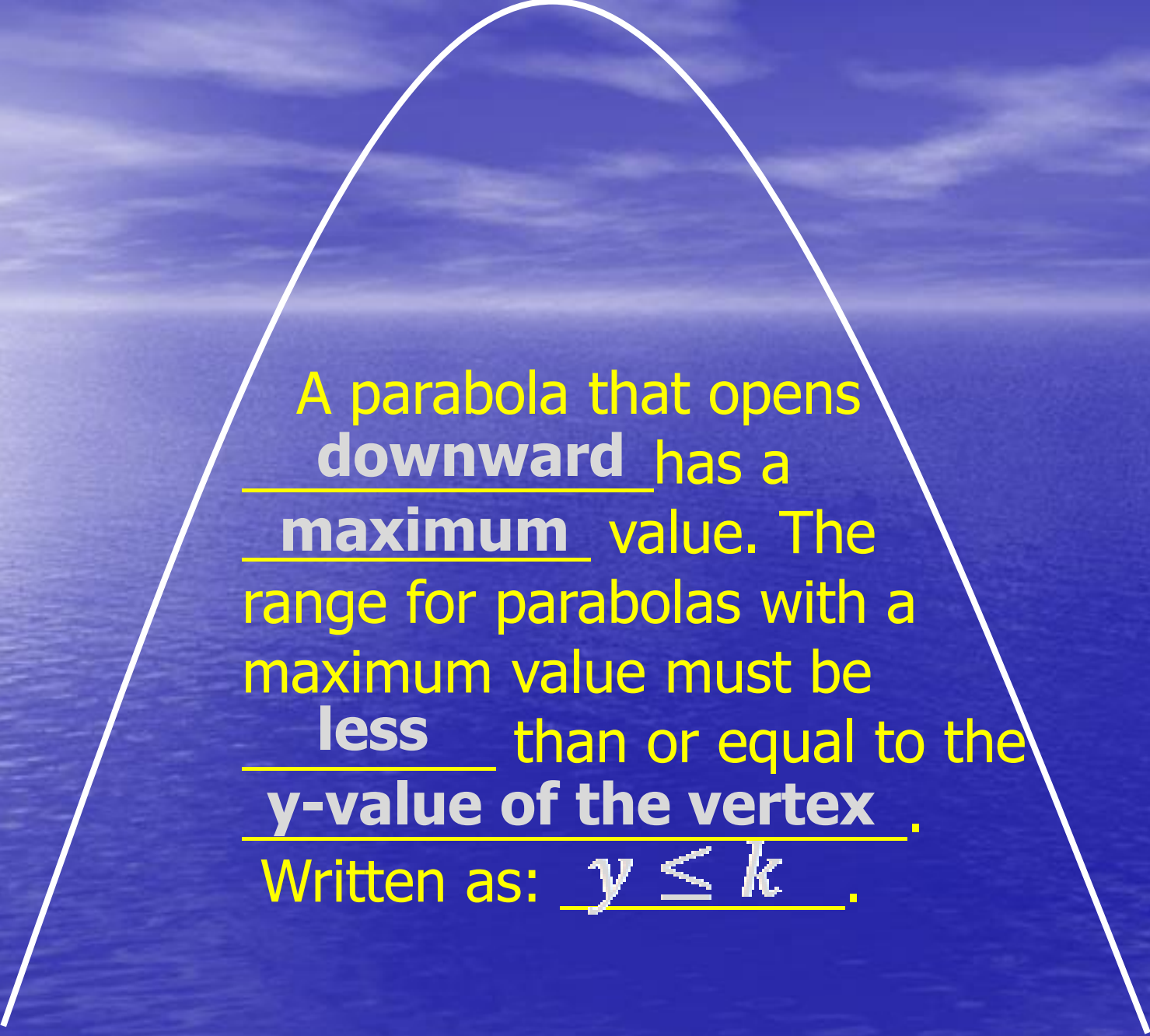Y-intercepts
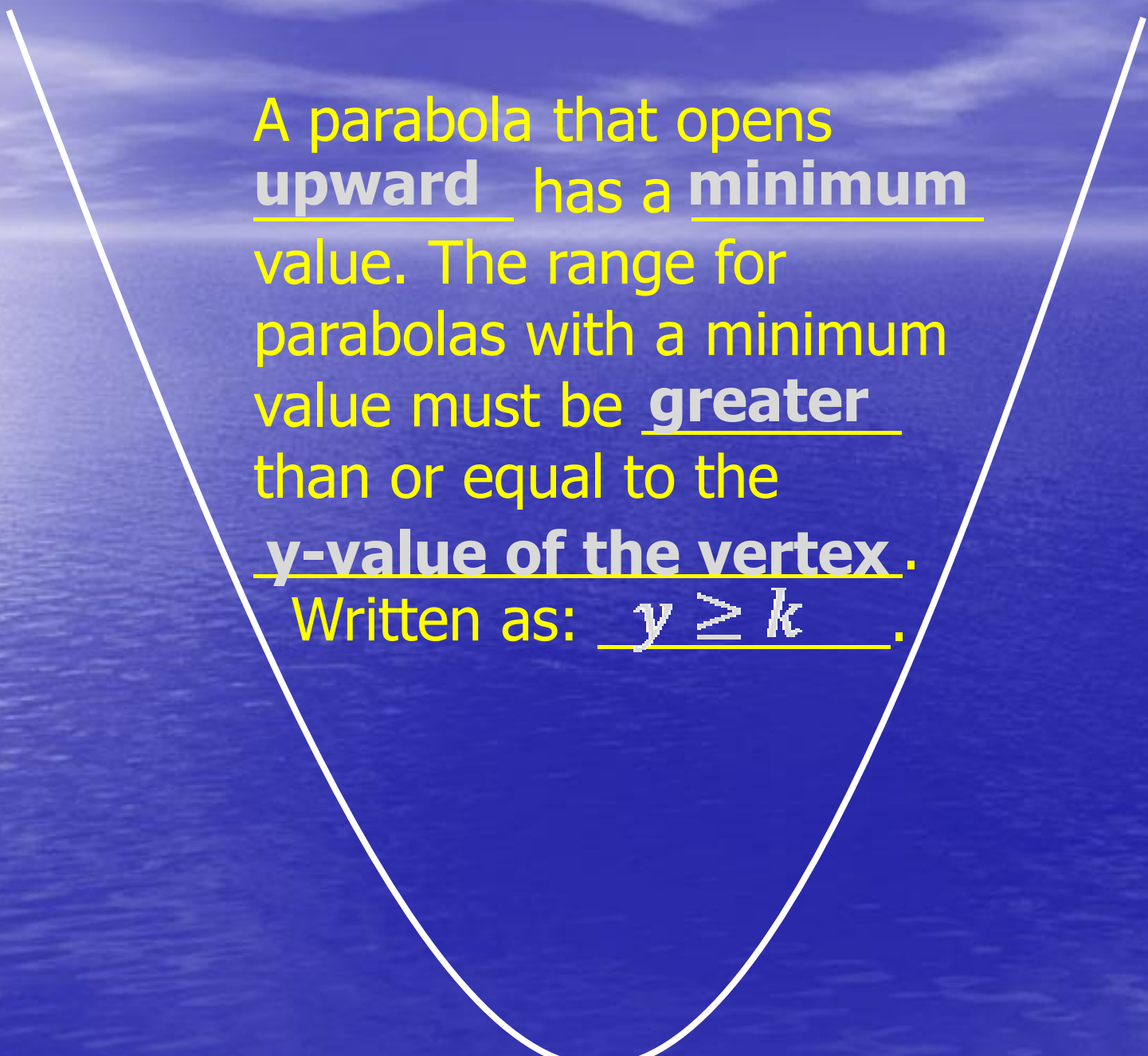
Definitions of the Parts…

- The **vertex** is the __**turning**__ __**point**__ of the equation, and written as an ordered pair **(h,k)** .

- Every parabola has an axis of symmetry. The __**axis**__ of __**symmetry**__ is the line of __**reflection**__ where the image on one side of the graph is the mirror image on the other side of the graph. This is the linear equation equal to the __**x**__ value of the vertex, written as __**x = h**__.

Definitions continued…

- The **domain**, the __x__ values, of the function is __all real numbers__.

- The **range**, the __y__ values, are limited by a __minimum__ or __maximum__ value. This value is the y value in the vertex.

A parabola that opens **upward** has a **minimum** value. The range for parabolas with a minimum value must be **greater** than or equal to the **y-value of the vertex**. Written as: $y \geq k$.

A parabola that opens **downward** has a **maximum** value. The range for parabolas with a maximum value must be **less** than or equal to the **y-value of the vertex**. Written as: $y \leq k$.

Solutions of a Quadratic Equations

- The word **solutions** for the quadratic equation are the **value(s) for x when y=0**. These are also the __**x**__ intercepts of the equation. They also called __**roots**__, __**solutions**__ and __**zeros**__. There can be __**two**__, __**one**__, or __**no**__ solutions for a quadratic equation.

Parabola's are EVERYWHERE...

- http://www.youtube.com/watch?v=cXOcB ADMp6o