

Answer on Question #62413 – Math – Algebra

Question

$$x^2 = 16^x$$

Solution

Draw graphs of functions $y = x^2$ (green line) and $y = 16^x$ (blue line).

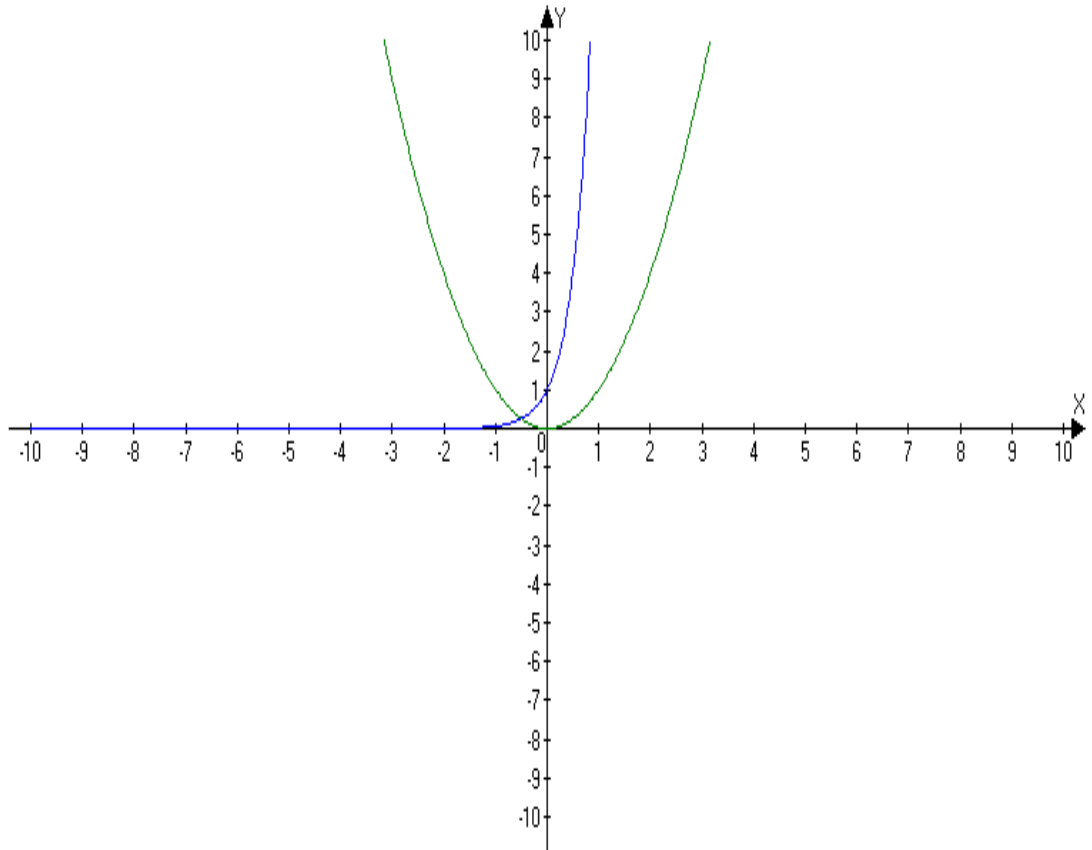


Figure 1 Graphs of functions $y = x^2$, $y = 16^x$

As you can see the graphs of the functions intersect at one point.

This means that the equation

$$x^2 = 16^x \quad (1)$$

has one solution.

The graphs show (see Figure 1) the solution is

$$x = -\frac{1}{2}. \quad (2)$$

Check it.

Substituting (2) for x into (1)

$$\left(-\frac{1}{2}\right)^2 = 16^{-\frac{1}{2}} \rightarrow \frac{1}{4} = \frac{1}{4},$$

which is true.

Thus, $x = -\frac{1}{2}$ is the only solution of equation (1).

Answer: $x = -\frac{1}{2}$.