

**Q1:**

**Answers**

1a:  $x = 2$

1b:  $x = 4$

1c: Three solutions from visual inspection of the graph shown below:

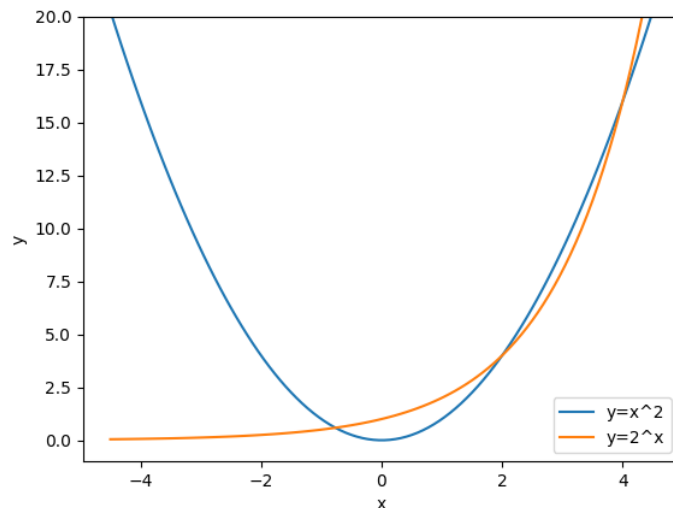


Fig 1c: Solution for equation  $x^2 = 2^x$  depicted by points of intersections between the curves  $y = x^2$  and  $y = 2^x$ .

1d: Other roots are not possible because the two equations  $y = x^2$  and  $y = 2^x$  represent curves having different rates of change of  $x$  with respect to  $y$  i.e.,  $dy/dx$ . Therefore, the curves will deviate from each other and point of intersection i.e., their solutions are not possible in the interval of numbers in real number domain.

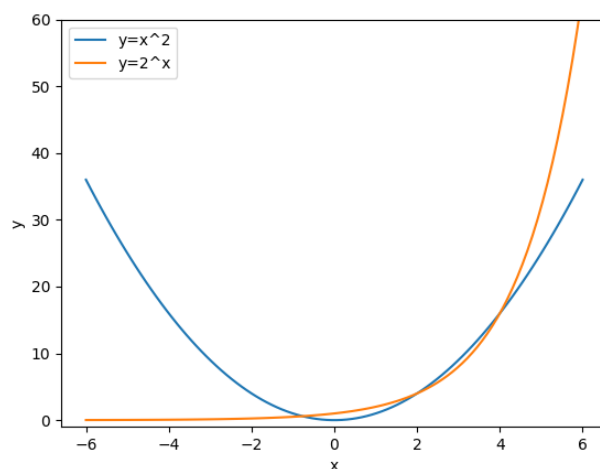


Fig 1d: Curves for  $y = x^2$  and  $y = 2^x$  in a different scale to depict their deviation from each other beyond the three intersection points.