Learning Objective

Understand the definition of a convex set graphically and by definition. Understand how to convert the intuition from graphing to a proof.

Questions

1. Show that the graph of $y \geq x^3$ in the xy plane is not a convex set.

   (a) by drawing the graph and a line segment between two points of the set.
   - What does it mean to say that a set S is convex graphically?

   (b) directly from the definition of convex set.
   - What does it mean to say that a set S is not convex by definition?
   - How is your proof related to part(a)?