

## WORKSHOP 1.6

### Handout

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Recall the intermediate value theorem:

Suppose  $f$  is a continuous function on the interval  $[a, b]$ . Then for any  $y$  between  $f(a)$  and  $f(b)$ , there exists a number  $c$  in the interval  $(a, b)$  satisfying  $f(c) = y$ .

Use the intermediate value theorem to answer the following question:

**Question:** Suppose you have a rectangle centred at the origin and an amoeba-like shape in the first quadrant (similar to the one below). Show that with one line you can divide both shapes in half (so half of the area of both the rectangle and amoeba lie above and below the line).

