

a and b are real numbers s.t.

$$-3 \leq a \leq 1$$

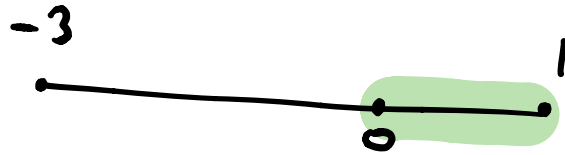
$$-2 \leq b \leq 4$$

Values For a and b are chosen at random.

What is the probability that the product ab is positive?

Case 1

$$a \in (0, 1)$$



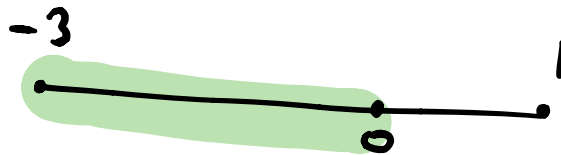
$$b \in (0, 4)$$



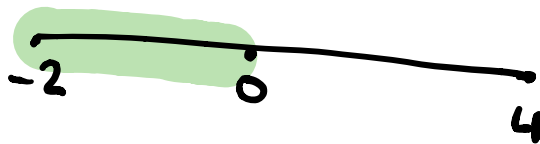
$$\text{Probability} = \frac{1}{4} \times \frac{4}{6} = \frac{1}{6}$$

Case 2

$$a \in (-3, 0)$$



$$b \in (-2, 0)$$



$$\text{Probability} = \frac{3}{4} \times \frac{2}{6} = \frac{6}{24} = \frac{1}{4}$$

$$\begin{aligned} \therefore \text{Required probability} &= \frac{1}{6} + \frac{1}{4} \\ &= \frac{5}{12} \end{aligned}$$