

## Probability Summary

If  $a \leq x_1 < x_2 \leq b$  and we pick  $x$  at random between  $a$  and  $b$ , then:

$$P(x_1 < x < x_2) = \frac{\int_{x_1}^{x_2} w(x) dx}{\int_a^b w(x) dx} = \frac{\text{Part}}{\text{Whole}}.$$

In our previous example, the weighting function described the height of a curve above the  $x$ -axis.

Our next probability problem will be more realistic. Suppose you're throwing darts at a dart board and your little brother is standing next to the dart board. How likely are you to hit your little brother?

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