

## 9.1 Continuous Random Variables

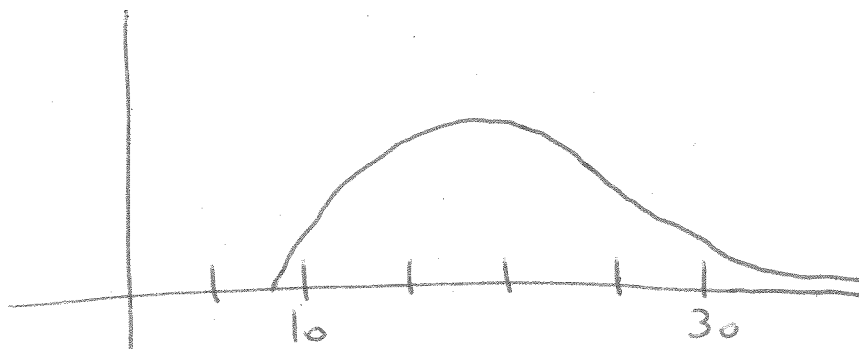
A continuous variable has infinitely-many decimal places.

e.g. mass  
temperature

A continuous random variable assigns a real number to each outcome of an experiment.

e.g.  $X = \text{time to run 100m (in seconds)}$   
is a continuous random variable

We can't list all the values of  $X$  in a table so we use a density curve.

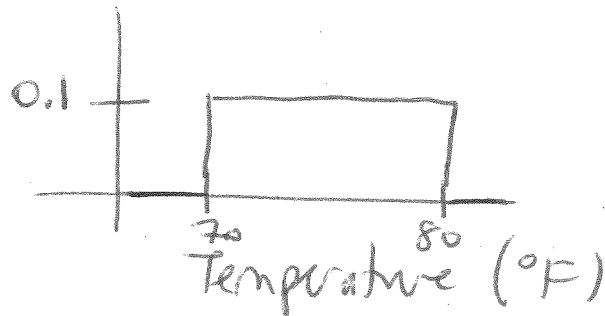


$X = \text{Time to run 100m (in seconds)}$

# Properties of Density Curves

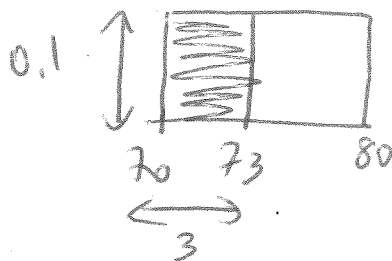
1. The curve is always on or above the  $x$ -axis.
2. The total area under the curve is 1.
3. Probability is area under the curve.
4. The probability of a single  $x$ -value is 0.

Ex: Consider the temperature in March in Pasadena. The density curve is:



Find the probability that the temperature is:

a) less than  $73^{\circ}\text{F}$



$$3(0.1) = 0.3$$

b) exactly  $73^{\circ}\text{F}$   
0