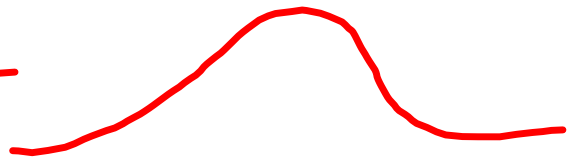
2.1 Density Curves

$\frac{\text{probability of an occurence}}{\text{total probability of all occurences}} = 1$

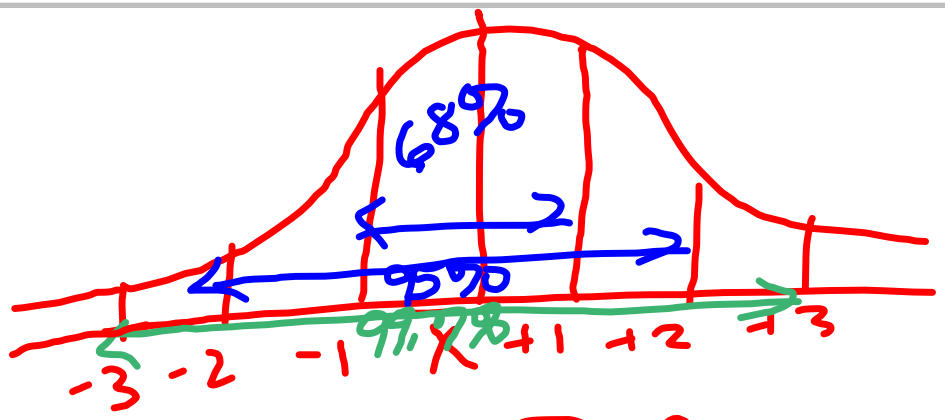
3 things you do w/ Data:

1. Shape → display it
2. Center – median & mean (describe)
3. Spread – variation
   - SD → mean
   - IQR → median

Normal Distribution



- Smooth curve
- Symmetric about median & mean
- Curve observe what proportions fall of the observations falls in each range
- Bars represent the proportions of observations falling into each category ⇒ area under the curve represents a proportion of "1 whole"



Empirical Rule → for an approximately normal distribution

68-95-99.7%

68% of the observations lie within ±1 SD

95% of the observations lie w/in 2 SD

99.7% of the observations lie w/in 3 SD

Ex: The mean of height of women is 65" w/ SD of $\sigma = 2"$. How many women (%) are taller than 69". Heights are approx normal

Draw drawings

total on both ends = 5%

$P(X > 69") = .025$

Density Curve

always above horizontal axis

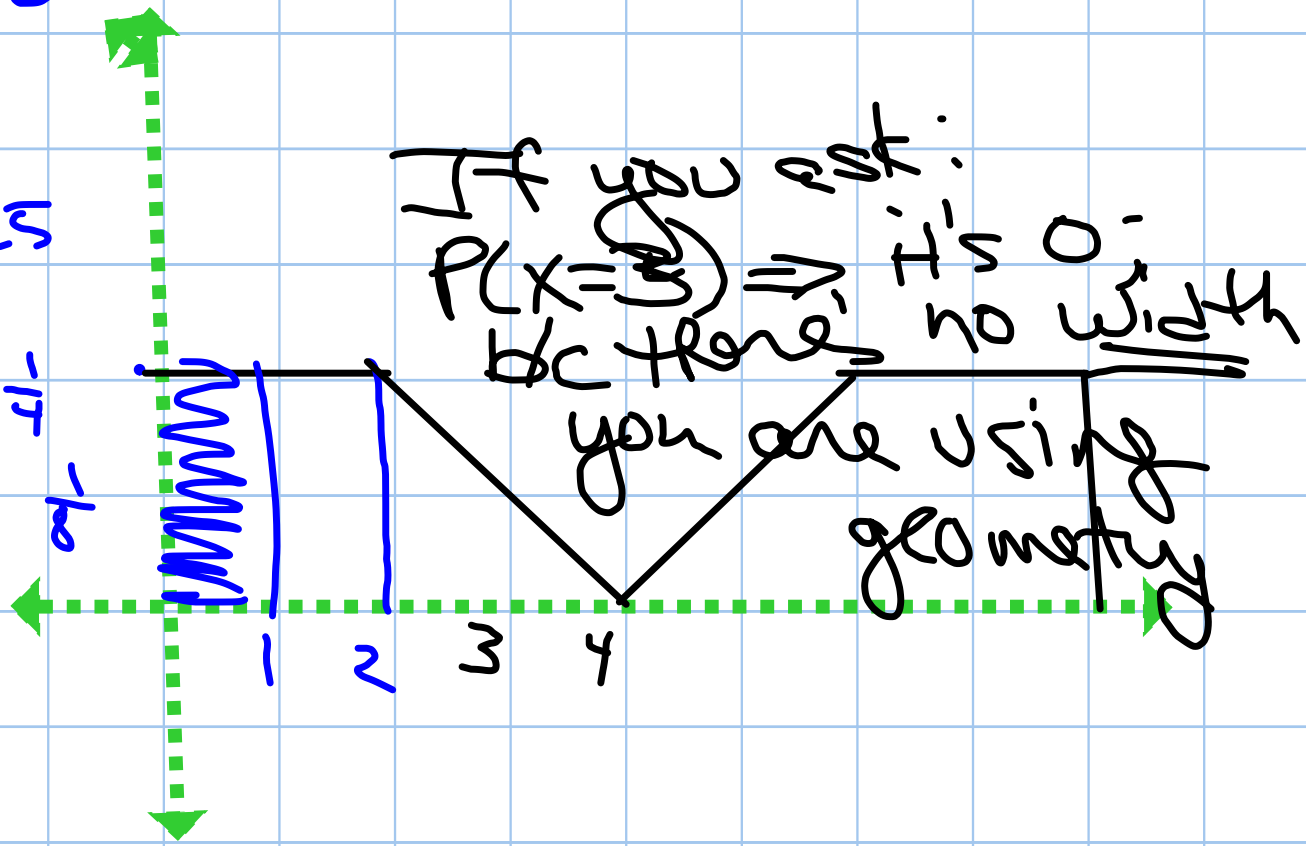
area = 1

use geometry to find probability

$P(x<1) = 1 \cdot \frac{1}{4} = \frac{1}{4} = .25$

$P(2<x<4) = \frac{1}{2} \cdot 2 \cdot \frac{1}{4} = \frac{1}{4}$

$\frac{1}{2}bh$



If you ask: $P(X=3)$ ⇒ it's 0 bc there's no width

you are using geometry