

6.2

Properties of the Normal Distribution

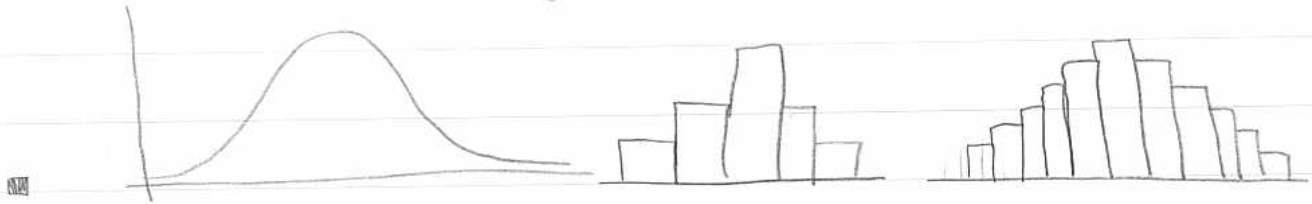
Co.2

# Properties of the Normal Distribution

approximately

Many things in life are normally distributed. Things like height, weight, etc.

(ex) American's heights



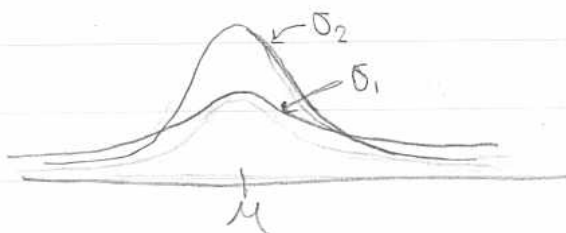
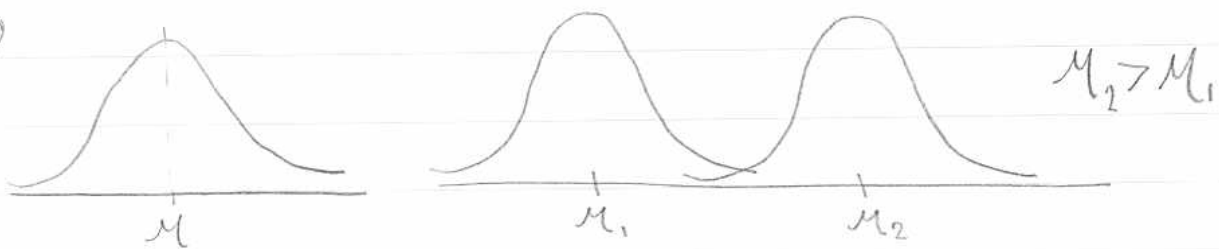
The mathematical equation for the normal distribution is

$$y = \frac{e^{-(x-\mu)^2/(2\sigma^2)}}{\sigma\sqrt{2\pi}}$$

$$\lim_{n \rightarrow \infty} \left(1 + \frac{1}{n}\right)^n = e$$

The normal distribution is a continuous, symmetric, bell-shaped distribution of a variable.

(ex)



$\sigma_1 > \sigma_2$  since  $\mu_1$  is more spread out.

## Properties of Normal Distribution

1. bell-shaped
2. mean, median, mode are equal & at center
3. unimodal (1 mode)
4. symmetric about  $\mu$ .
5. curve is continuous
6. curve never touches x-axis
7. Area under the curve is 1.0
8. Area under the curve within
  - 1 st. dev. is .68
  - 2 st. dev. is .95
  - 3 st. dev. is .997