Probability Density Functions (continuous vars)

- We can't list all the values on a table because continuous. So, we list ranges.
  - *N.B. square brackets are inclusive*
- So we can ask "*what is the probability of x falling in $[a, b]$?*"

Question: *What is the probability that x lies in $[a, b]$?*

- To answer this question we need a pdf (probability distribution function), let's call ours $f(x)$
- $P(a \leq x \leq b) = \int_a^b f(x)dx$
  - Total area under pdf is always 1

Example 29.1

x is a cont r.v. where $x \in [1, 4]$ the pdf is $f(x) = \dfrac{1}{2\sqrt{x}}$ where $1 \leq x \leq 4$

a. Is $f(x)$ a pdf?

- Total must be 1
  - $\int_1^4 \left(\dfrac{1}{2\sqrt{x}}\right)dx = \dfrac{1}{2}\int_1^4 \left(x^{-\frac{1}{2}}\right)dx = \left[\dfrac{2x^{\frac{1}{2}}}{2}\right]_1^4 = \left[\sqrt{x}\right]_1^4 = \sqrt{4} -$
    - So, yes

Majoritarian vs. Consensus government

- A majoritarian govt. can be formed by a majority or a plurality of the vote

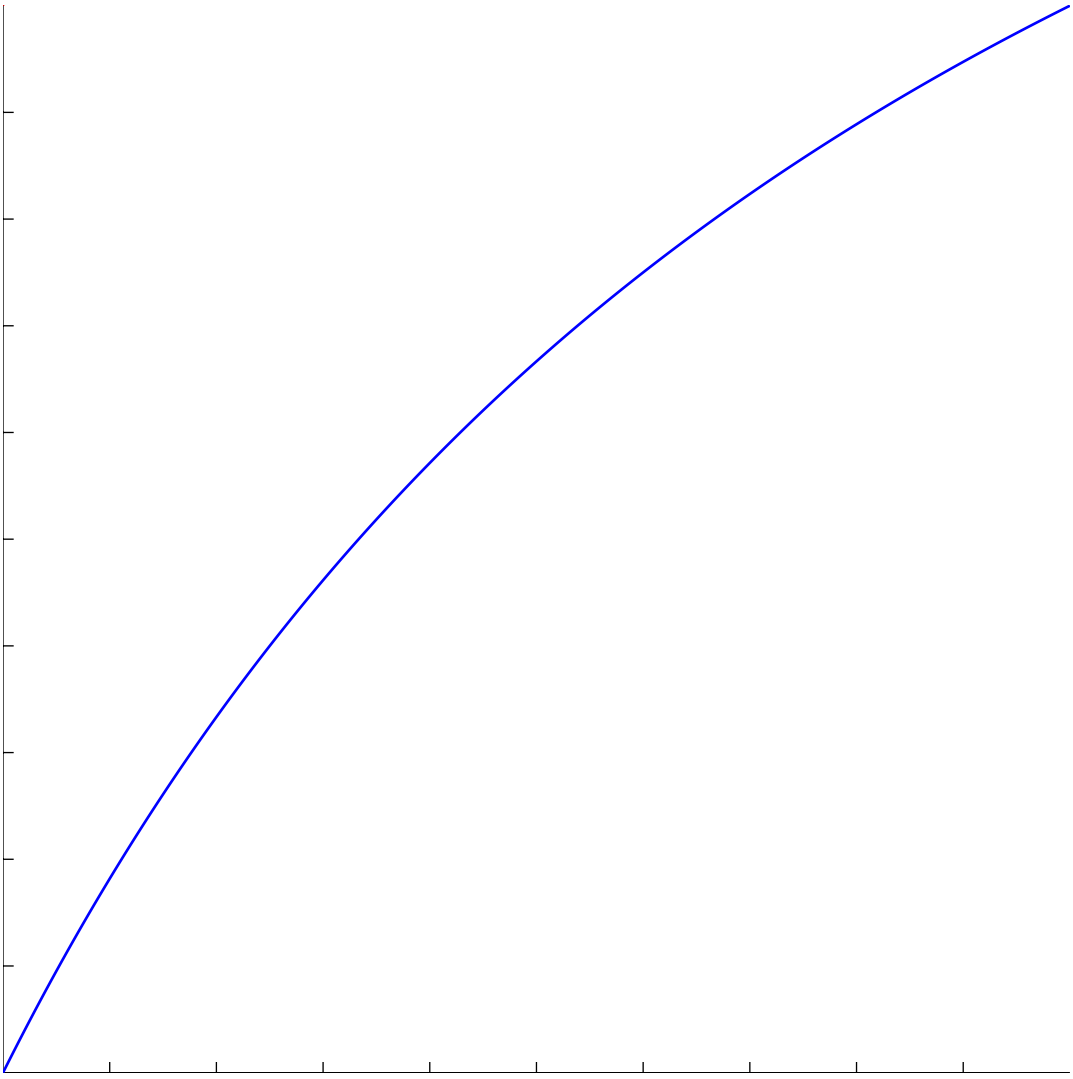
Source: Lijphart, 1984, 1999	Majoritarian (Westminster)	Consensus
Executive Power	Concentrated	Dispersed
Relationship between exec and legislative	Fused. Exec dominates	Separated
Number of chambers	One	Two
Number of parties in legislatures	Two	Multiple
Electoral System	FPTP	Proportional
Relationship between central and local	Central dominates	Central doesn't dominate
Constitution	Nothing limiting anything	Supreme law constitution with judicial review

$SINR(P) = \log\left(1 + \frac{PG_1}{PG_2 + 1}\right)$ (Signal Range with interference and noise ratio)

Example

$G_1 = 1, G_2 = \frac{1}{10}$

$SINR(P) = \frac{P}{\frac{P}{10} + 1} = \frac{10P}{P + 10}$



We also support some TeX: μPad is cool! $a^2 + b^2 = c^2$