**Please write an outline of the main contents of the lecture.**

- Fundamental Theorem of Calculus

- Connection between derivative and integral
  - function between 2 points $[a, b]$

- Notation:
  - f between $[a, b]$

  $$F(x) = \int_a^x f(t)\, dt$$

  - f = derivative
  - F = antiderivative

- Fundamental Theorem of Calculus

  $$\frac{dF}{dx} = \frac{d}{dx} \int_a^x f(t)\, dt = f(x)$$

  - From antiderivative to derivative

1:00 pm

Luke

Summary / Search

Group 3

B, C, A
K   5   1.

**Please write an outline of the main contents of the lecture.**
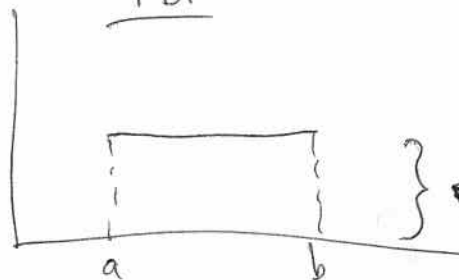
- Uniform random variable
  - $X \sim \text{Unif}(a,b)$
  - $X$ takes values between $[a,b]$
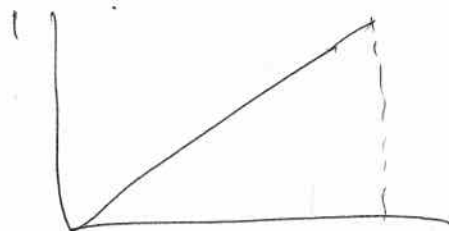  - All values have same chance
- Graph:

PDF

— constant function

- Area must be 1 so height $= \frac{1}{b-a}$
- $p(x)$

- CDF:

$$- F_X(x) \int p(x) \, dx$$

$$- F_X(x) = \Pr(x \leq x)$$

**Please write an outline of the main contents of the lecture.**

- Euler's formula: $e^{ix} = \cos(x) + i \cdot \sin(x)$ 🗨

    - can be used to prove trigonometric formulas.

E.g. $\sin^2(x) + \cos^2(x) = 1$ 🗨

- Angle sum formulas 🗨

    - $\cos(a+b) = \cos a \cos b - \sin a \sin b$ 🗨

    - $\sin(a+b) = \cos a \sin b + \sin a \cos b$ 🗨

    - $\cos(2x) = \cos^2(x) - \sin^2(x)$ 🗨

    - $\sin(2x) = 2\sin(x)\cos(x)$ 🗨

🗨