Lesson #14 (week #7) Section 1 of 3

correction (example)

χ: $\mu = 5$, $\sigma^2 = 4$, $\sigma = 2$

$\chi + \chi$: $\mu = 5+5$, $\sigma^2 = 4+4$, $\sigma = \sqrt{4+4}$

$\chi - \chi$: $\mu = 0$ (no change), σ^2, σ

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I- Different types of Distribution

- Binomial Distribution
- Bell curve
- Skewed
- Uniform

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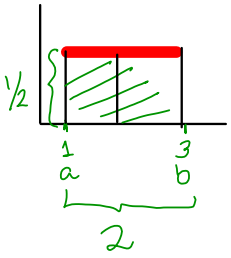
Uniform Distribution: Looks like a straight line



Area (total) = 1

↓ base × height

↓ ↓

$(b-a)$ $\frac{1}{b-a}$

$2 \times \frac{1}{2} = 1$

$3 \times \frac{1}{3} = 1$

$4 \times \frac{1}{4} = 1$

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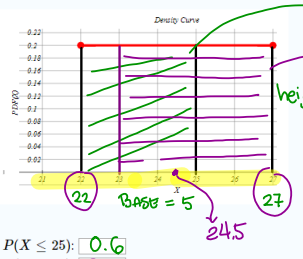
Consider the density curve plotted below:



Base × height

$3 \times 0.2 = 0.6$

Base × height

height = 0.2 $4 \times 0.2 = 0.8$

check $5 \times 0.2 = 1$ ✓

Base = 5

Find $P(X \leq 25)$: 0.6

Find $P(X > 23)$: 0.8

Calculate the following. Q1:

median: 24.5

Q3:

IQR:

$\frac{24.5-22}{2} = \frac{2.5}{2} = 1.25 + 22 = 23.25$

Q3 − Q1

$\frac{27-24.5}{2} = 1.25 + 24.5 = 25.75$

$25.75 - 23.25$

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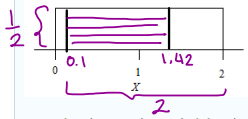
Continous variable

The probability density of a random variable X is given in the figure below.



$\frac{1}{2} \cdot 2 = 1$

Base $(1.42-0.1) \cdot$ height $\frac{1}{2}$ = Area

From this density, the probability that X is between 0.1 and 1.42 is:

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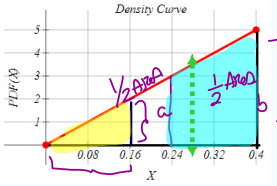
Consider the density curve plotted below:



$\rightarrow \frac{b \times h}{2}$ = Area of Triangle

→ Trapezoid $\frac{(a+b)}{2} \times h$

Find $P(X < 0.16)$:

Find $P(X > 0.24)$:

Find the median of X:

→ median - Divide the picture in such a way that you will two section with equal areas

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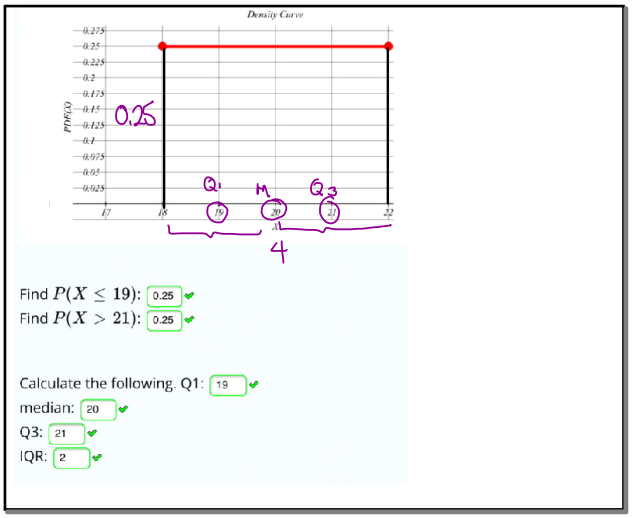

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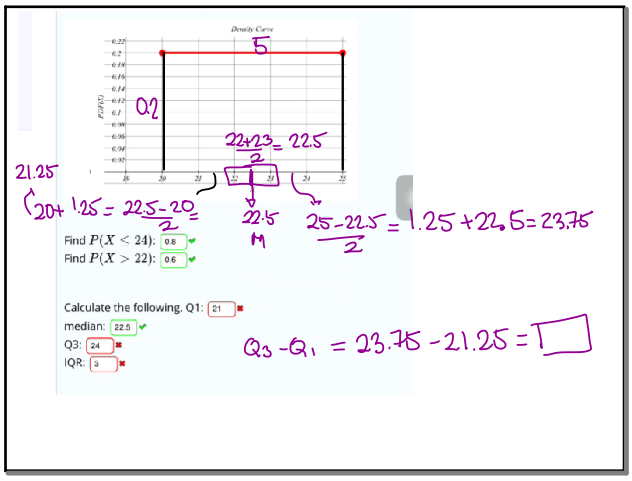

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