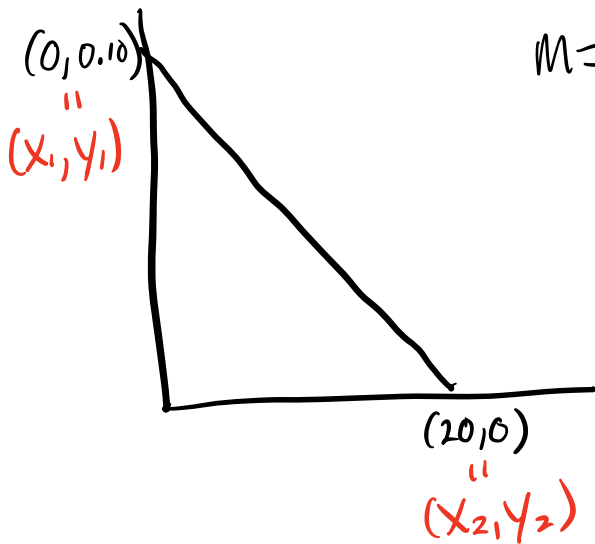


11/2/2021



a) Equation of the line

$$m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{0 - 0.10}{20 - 0} = \boxed{-0.005}$$

Now, plug into the point-slope formula to get the equation

$$y - y_1 = m(x - x_1)$$

$$m = -0.005$$

$$(x_1, y_1) = (0, 0.10)$$

$$y - 0.10 = -0.005(x - 0)$$

$$y - 0.10 = -0.005x$$

$$a) \boxed{y = -0.005x + 0.10 = f(x)}$$

This is our pdf

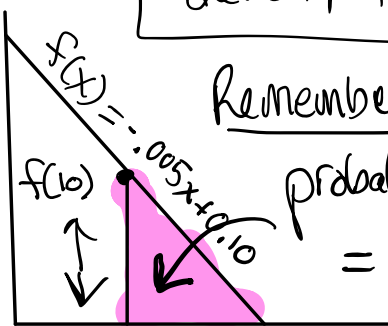
b) Find the probability that X is greater than 10.

$$P(X > 10)$$

"probability density function"

Area of Δ : $\frac{1}{2} b \times h$

$$\text{base} = 10 \quad \text{height } f(10) = 0.005(10) + 0.10 = 0.15$$



Remember:

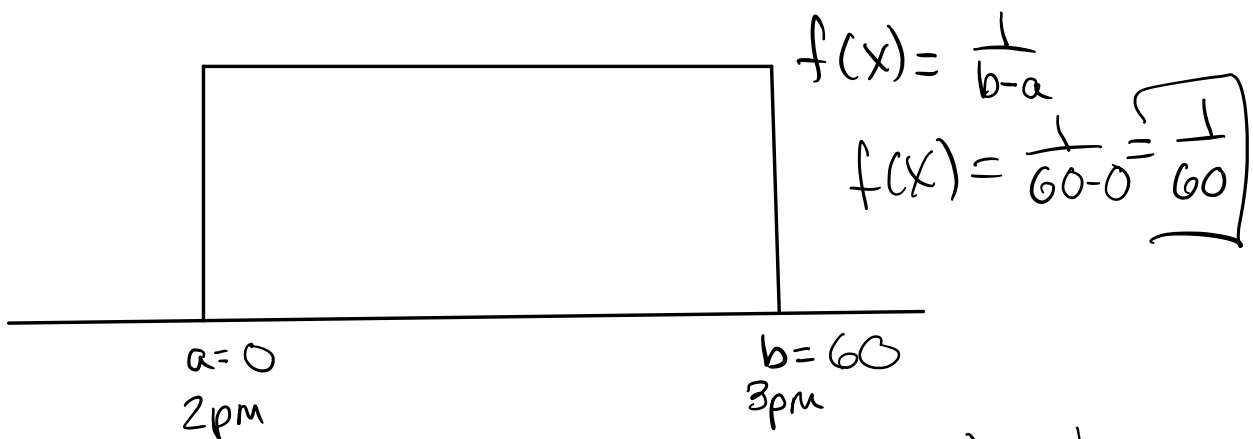
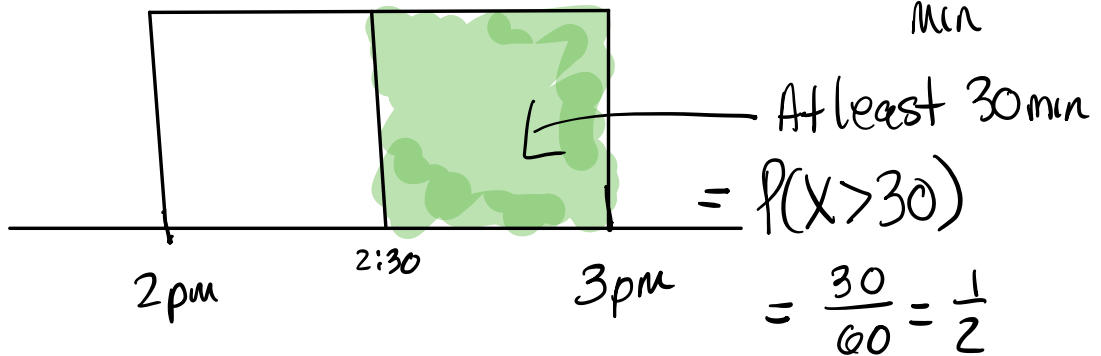
probability = area of Δ !

$$P(6 < X < 12) = 7 \cdot (0.07) - 4 \cdot (0.04) = \boxed{0.33}$$

Ex 2

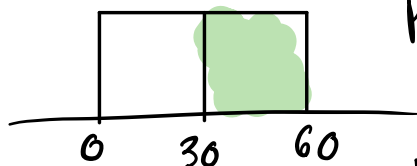
Area = 60
min

a)



$$P(x_1 < X < x_2) = \text{base} \times \text{height} = (x_2 - x_1) \cdot \frac{1}{b-a}$$

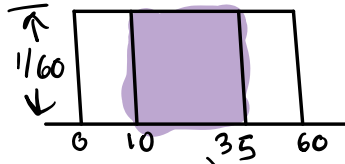
a) $P(X \geq 30) =$



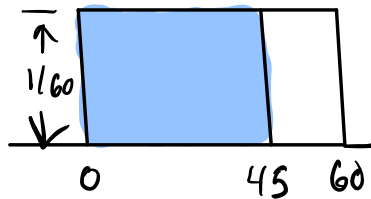
base
←
pdf = f(x)
←
 $P(X \geq 30) = 30 \cdot \frac{1}{60} = \frac{30}{60} = \frac{1}{2}$

b) $P(X \leq 15) = \frac{1}{60} \cdot 15 = \frac{1}{4}$

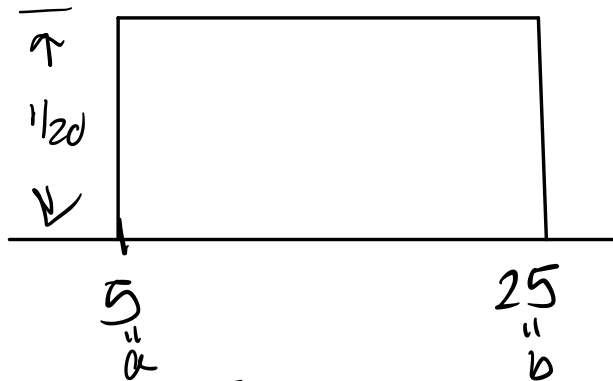
$$c) P(10 \leq X \leq 35) = \frac{1}{60} \cdot 25 = \frac{5}{12}$$



$$d) P(X < 45) = \frac{1}{60} \cdot 45 = \frac{3}{4}$$



Ex

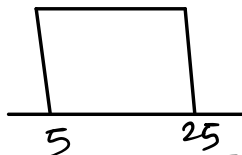


$$f(x) = \frac{1}{b-a}$$

$$= \frac{1}{25-5}$$

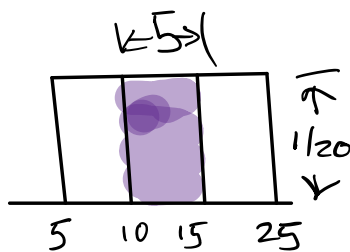
$$= \frac{1}{20}$$

$$a) P(X > 25) = 0 \text{ (trick question!)}$$

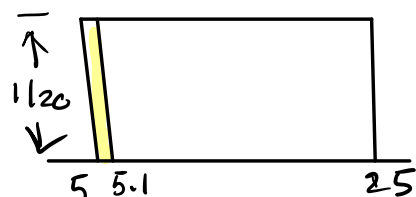


$$b) P(10 < X < 15) =$$

$$= \frac{1}{20} \cdot 5 = \frac{1}{4}$$



$$c) P(5 < X < 5.1) =$$



$$= \frac{1}{20} \cdot (0.1) = \boxed{0.005}$$