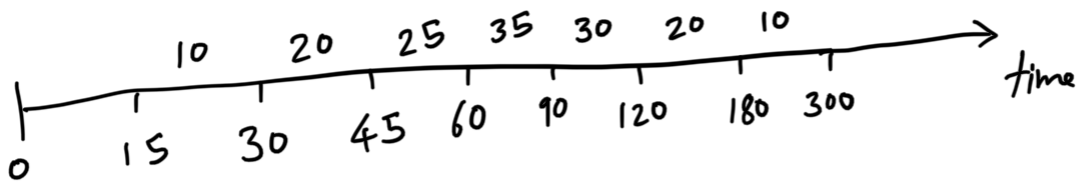
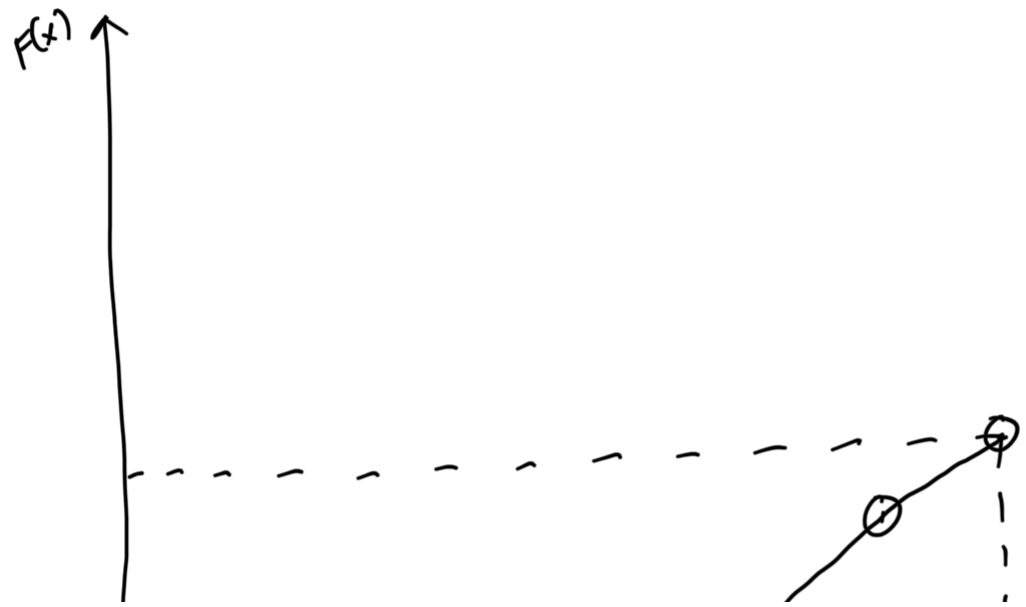
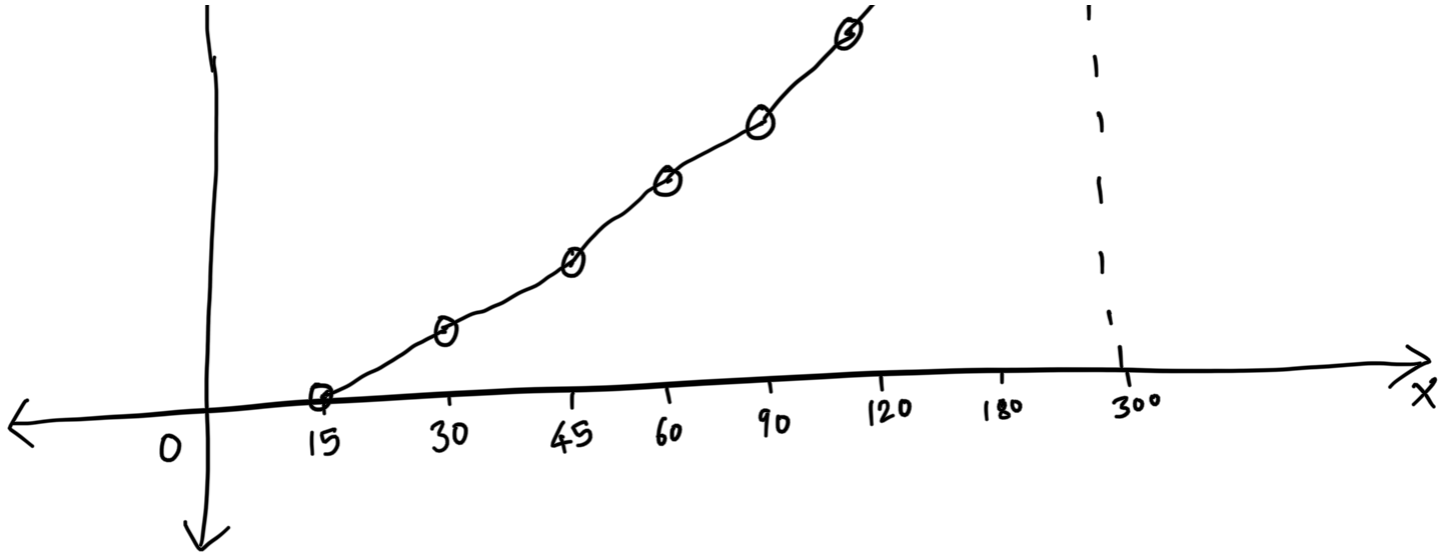
HW 9

① 

Total = 150

k	S_k	P_k	C_k
1	$15 \le x \le 30$	$1/15$	$1/15$
2	$30 \le x \le 45$	$2/15$	$3/15$
3	$45 \le x \le 60$	$5/30$	$11/30$
4	$60 \le x \le 90$	$7/30$	$9/15$
5	$90 \le x \le 120$	$3/15$	$12/15$
6	$120 \le x \le 180$	$2/15$	$14/15$
7	$180 \le x \le 300$	$1/15$	1





$$F(x) = C_{k-1} + m_k (x - X_{k-1})$$

$$m_k = \frac{C_k - C_{k-1}}{X_k - X_{k-1}}$$

Therefore, $X = X_{k-1} + \left(\frac{X_k - X_{k-1}}{C_k - C_{k-1}} \right) (R - C_{k-1})$, $F(x) = R$

$$= X_{k-1} + \frac{R - C_{k-1}}{m_{k-1}}$$

$$X = F^{-1}(R) = \begin{cases} 15 + \frac{R-0}{m_0} & , 0 \le R \le 1/15 \\ 30 + \frac{R-1/15}{m_1} & , 1/15 \le R \le 3/15 \\ 45 + \frac{R-3/15}{m_2} & , 3/15 \le R \le 11/30 \\ 60 + \frac{R-11/30}{m_3} & , 11/30 \le R \le 9/15 \\ 90 + \frac{R-9/15}{m_4} & , 9/15 \le R \le 12/15 \\ \frac{R-12/15}{} & 12/ \quad < R \le 14/15 \end{cases}$$

$120 + \frac{R - 12/15}{m_5}$, $12/15 \leq R \leq 14/15$

$180 + \frac{R - 14/15}{m_6}$, $14/15 \leq R \leq 1$

$$m_0 = \frac{1/15 - 0}{30 - 15} = \frac{1}{15 \times 15} = \frac{1}{225}$$

$$m_1 = \frac{3/15 - 1/15}{45 - 30} = \frac{2}{15 \times 15} = \frac{2}{225}$$

$$m_2 = \frac{11/30 - 3/15}{60 - 45} = \frac{5}{30 \times 15} = \frac{1}{90}$$

$$m_3 = \frac{9/15 - 11/30}{90 - 60} = \frac{7}{30 \times 30} = \frac{7}{900}$$

$$m_4 = \frac{12/15 - 9/15}{120 - 90} = \frac{3}{15 \times 30} = \frac{1}{150}$$

$$m_5 = \frac{14/15 - 12/15}{180 - 120} = \frac{2}{15 \times 60} = \frac{1}{450}$$

$$m_6 = \frac{1 - 14/15}{300 - 180} = \frac{1}{15 \times 120} = \frac{1}{1800}$$