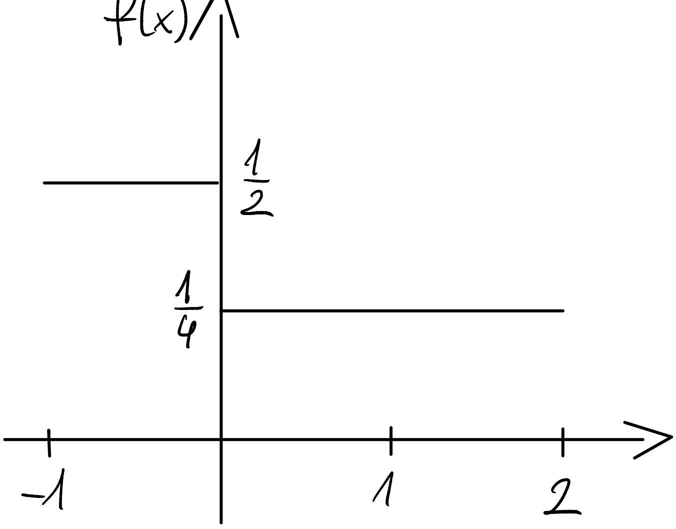
i)



$$f(x)=\begin{cases} \frac{1}{2}, & -1 \le x < 0 \\ \frac{1}{4}, & 0 \le x < 2 \\ 0, & -1 > x > 2 \end{cases}$$

$$F(x)=\int_{-\infty}^{x} f(t)\,dt = \int_{-\infty}^{-1} 0\,dt = 0$$

$$F(x)=\int_{-\infty}^{x} f(t)\,dt = \int_{-\infty}^{-1} 0\,dt + \int_{-1}^{x} f(t)\,dt = \frac{1}{2}t\Big|_{-1}^{x} = \frac{1}{2}x+\frac{1}{2}$$

$$F(x)=\int_{-\infty}^{x} f(t)\,dt = \int_{-\infty}^{-1} 0\,dt + \int_{-1}^{0} \frac{1}{2}\,dt + \int_{0}^{x} \frac{1}{4}\,dt =$$

$$= 0 + \frac{1}{2} + \frac{1}{4}t\Big|_{0}^{x} = \frac{1}{2}+\frac{1}{4}x$$

$$F(x)=\int_{-\infty}^{x} f(t)\,dt = \int_{-\infty}^{-1} 0\,dt + \int_{-1}^{0} \frac{1}{2}\,dt + \int_{0}^{2} \frac{1}{4}\,dt = \frac{1}{2} + \frac{1}{4}x\Big|_{0}^{2} =$$

$$= \frac{1}{2}+\frac{2}{4} = \underline{1}$$

$$\frac{1}{2}x+\frac{1}{2}=u$$

$$\frac{1}{2}x = u-\frac{1}{2} \quad / \cdot 2$$

$$-1 \le x = 2u-1 < 0$$

$$0 \le u < \frac{1}{2}$$

$$\frac{1}{4}x+\frac{1}{2}=u$$

$$\frac{1}{4}x = u-\frac{1}{2} \quad / \cdot 4$$

$$0 \le x = 4u-2 < 2$$

$$\frac{1}{2} \le u < 1$$