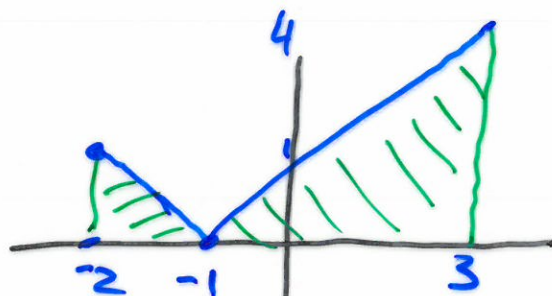


10.7

1 (ii) $I = \int_{-2}^3 |x+1| dx$

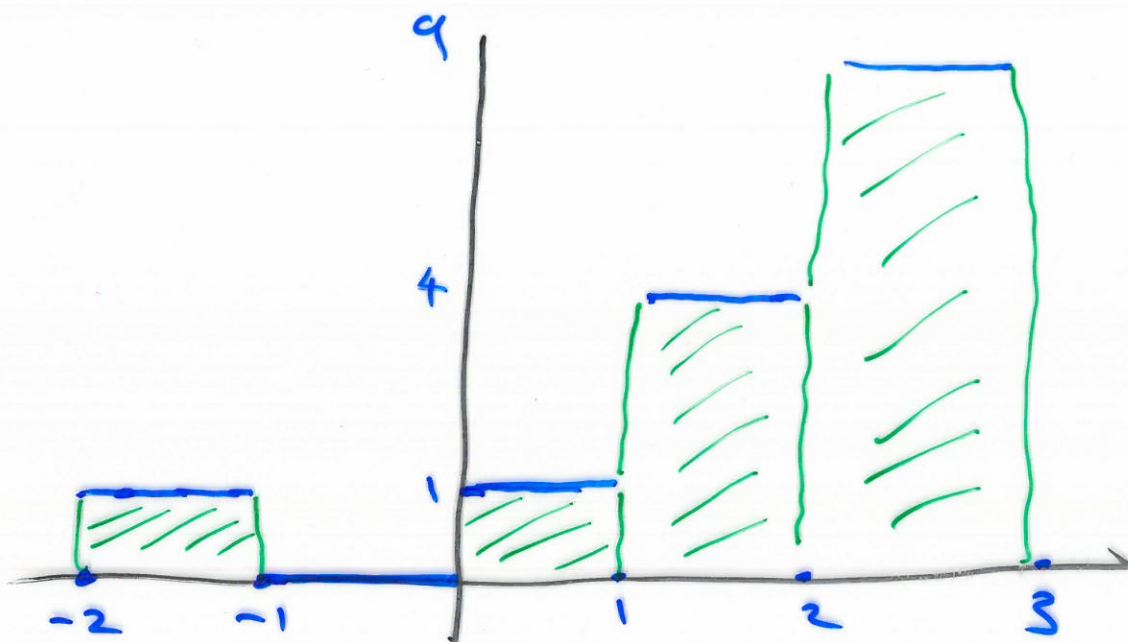
$$y = |x+1|$$



$$I = \frac{1}{2} \cdot 1 \cdot 1 + \frac{1}{2} \cdot 4 \cdot 4 = 8\frac{1}{2}$$

2 (ii) $I = \int_{-2}^3 [x+1]^2 dx$

$$y = [x+1]^2$$



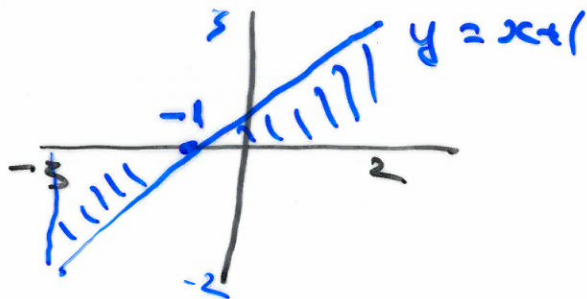
$$I = 1 + 4 + 9 + 16 = 30$$

3 (ii)

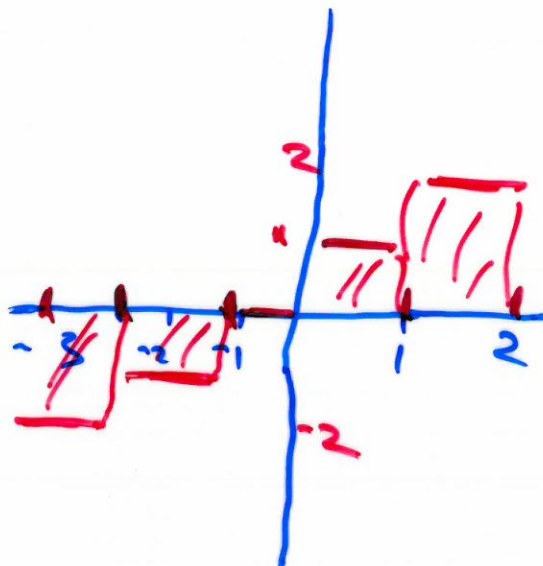
$$I = \int_{-3}^2 \frac{1}{4} (x+1 + \lfloor x+1 \rfloor) dx$$

$$I = \frac{1}{4} \int_{-3}^2 (x+1 + \lfloor x+1 \rfloor) dx$$

$$I = \frac{1}{4} \int_{-3}^2 (x+1) dx + \frac{1}{4} \int_{-3}^2 \lfloor x+1 \rfloor dx$$



$$\begin{aligned} & -2 + \frac{1}{2} 3 \cdot 3 \\ & = 2\frac{1}{2} \end{aligned}$$

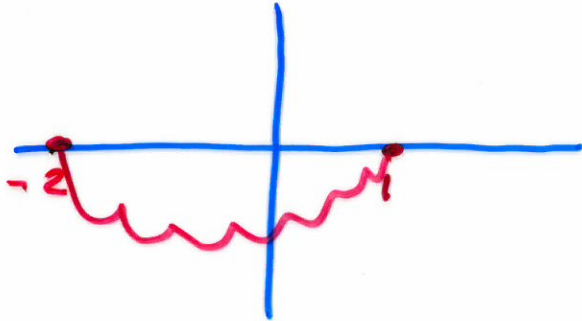


$$-3 + 3 = 0$$

$$I = \frac{1}{4} \left(\frac{5}{2} \right) + \frac{1}{4} (0) = \frac{5}{8}$$

$$4(ii) \quad y = x^2 + x - 2$$

$$y = (x - 1)(x + 2)$$



$$\text{Area} = \int_{-2}^1 x^2 + x - 2 \, dx$$

$$= \left. \frac{x^3}{3} + \frac{x^2}{2} - 2x \right|_{-2}^1$$

$$= \frac{1}{3} + \frac{1}{2} - 2 - \left(-\frac{8}{3} + 2 + 4 \right)$$

$$= \frac{2 + 3 - 12 + 16 - 12 - 24}{6}$$

$$= \frac{8 - 27}{6} = -\frac{9}{2}$$