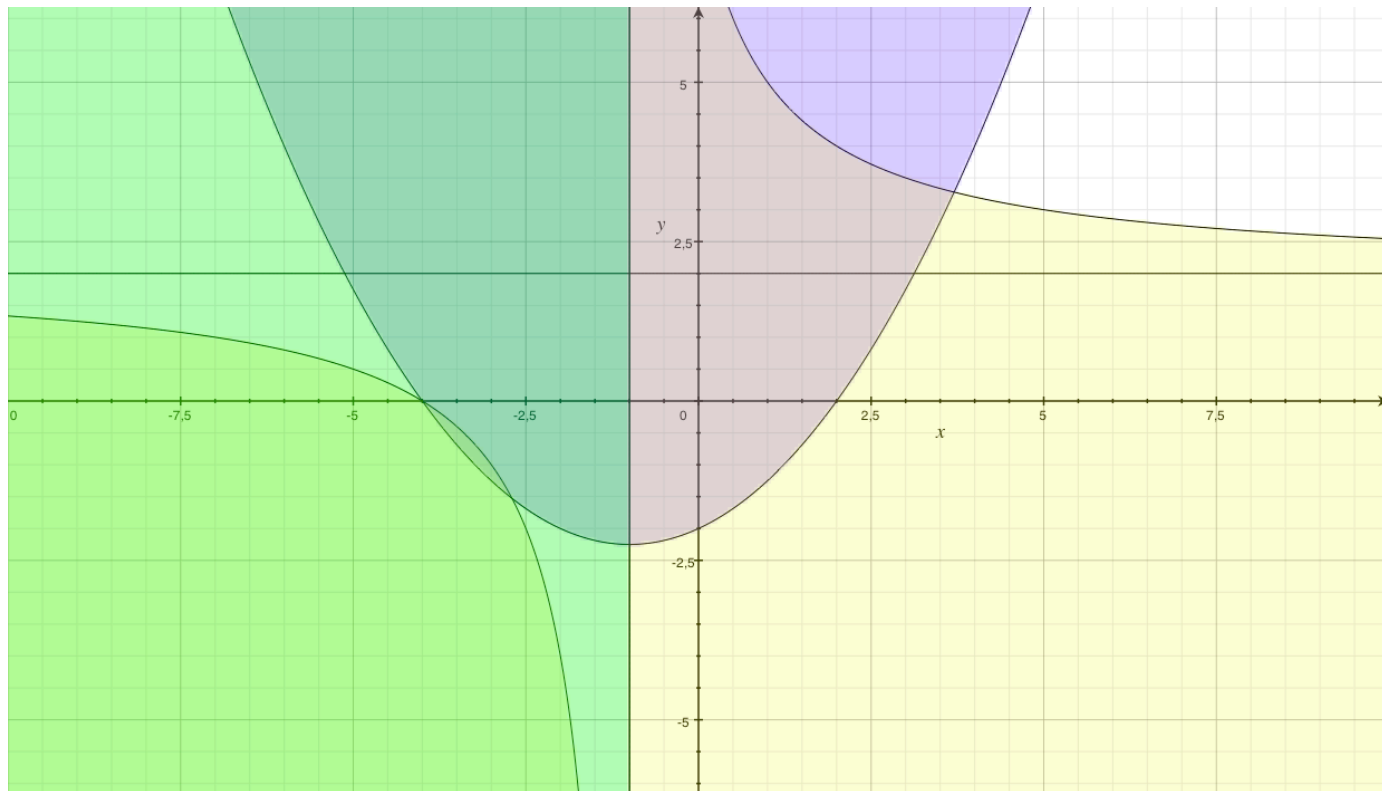Answer to Ex.II / Assgnt #1

$$f : x \mapsto y = \frac{1}{4}x^2 + \frac{1}{2}x - 2 \quad (P) \quad ; \quad h : x \mapsto y = \frac{2x+8}{x+1} \quad (H)$$

Interception points :

Solve the equation : since x=-4 is obviously a common point on the x Axis

One can factor the quantity (x+4) on both sides …

$$\frac{1}{4}x^2 + \frac{1}{2}x - 2 = \frac{2x+8}{x+1} \quad \Leftrightarrow \quad \frac{1}{4}(x+4)(x-2) = 2\frac{x+4}{x+1}$$

$$\Leftrightarrow \quad (x+4)(x-2)(x+1) = 8(x+4)$$

$$\Leftrightarrow \quad (x+4)\left[(x-2)(x+1)-8\right] = 0$$

$$\Leftrightarrow \quad (x+4)(x^2 - x - 10) = 0$$

$$\Leftrightarrow \quad \begin{cases} x+4 = 0 \\ x^2 - x - 10 = 0 \end{cases}$$

$$\Leftrightarrow \quad \begin{cases} x = -4 \\ x = \dfrac{1-\sqrt{41}}{2} = -2.7 \\ x = \dfrac{1+\sqrt{41}}{2} = 3.7 \end{cases}$$