

a) Hch=1, c=7

why com the 17

(1 1 + (11 Pd1) P = 1 phoc p=1 => & lfc(+) W4 = 1 => \$ \left(\frac{t}{c} + 1\right) d+ \left(\frac{t}{c} + 1\right) d+ = 1 \\
\tag{1.5} \\
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\ => \frac{t^2}{2c} + t \right|^0 + \frac{-t^2}{2c} + t \right|^C = 1 $\Rightarrow 0 - (\frac{c^2}{2c} - c) + \frac{c^2}{2c} + c - 0 = 1$

b) | felz=1x=7

() | A(+) |2+)=1 => ()/fc2(+) H+)2=1

$$\Rightarrow \left(0 - \left(\frac{-3}{3c^2} + c' - c\right) + \frac{3}{3c^3} - c + c - 0\right)^{1/2} = 1$$

$$(\frac{2c}{3})^{1/2} = 1 \Rightarrow c = \frac{3}{2}$$

C) hell(R) bas hehle) 7

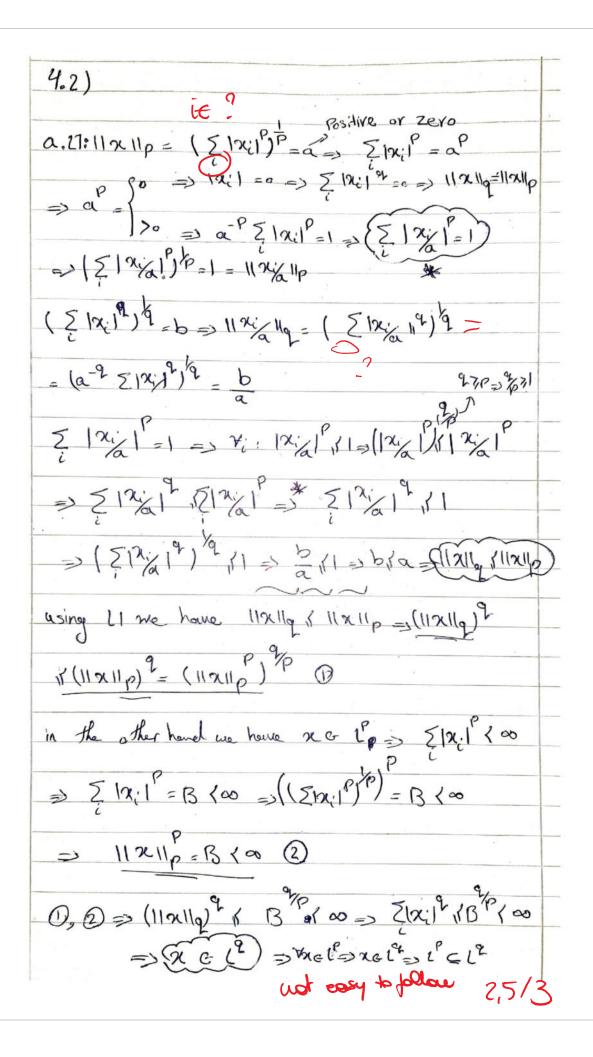
$$h(t) = 5 \frac{1}{\sqrt{1-t^{2}}}, t \in [0,1)$$

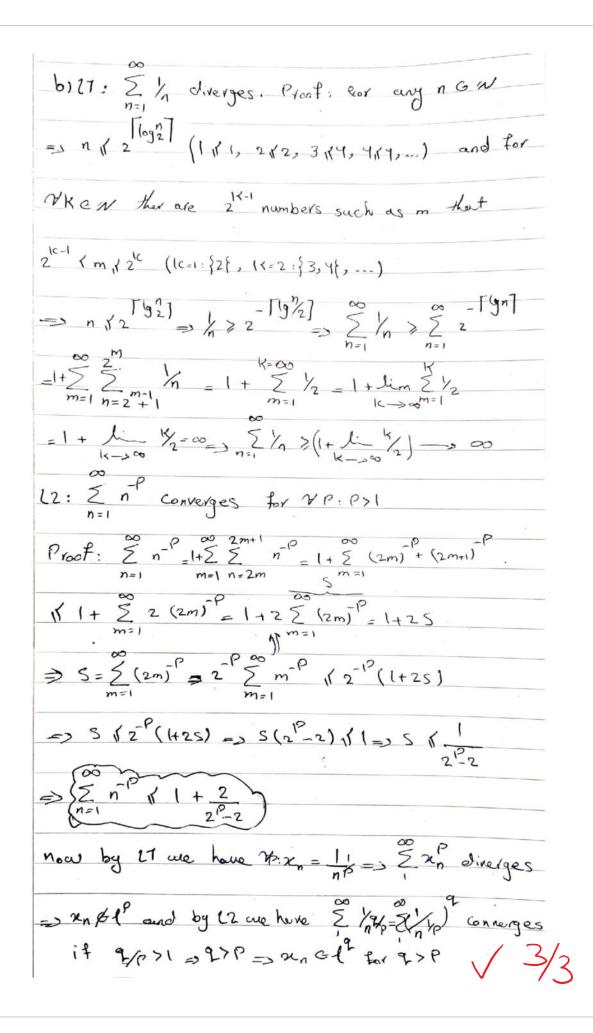
$$0 \text{ otherse}$$

 $\left(\int |h(t)|^2 dt\right)^2 = \int \frac{1}{\sqrt{1-t^2}} dt = \arcsin(t) \Big|_0^1 = \frac{c^2}{2} \Rightarrow h(t) \in L^2(R)$ $\left(\int |h(t)|^2 dt\right)^2 = \left(\int \frac{1}{\sqrt{1-t^2}} dt\right)^2 = \left(\int \frac{1}{1-t^2} dt\right)^2 = \left(\frac{1}{2} \log \left|\frac{t}{1-t}\right| \right) \Big|_0^1 = \infty \Rightarrow h(t) \notin L^2(R)$ $\left(\int |h(t)|^2 dt\right)^2 = \left(\int \frac{1}{\sqrt{1-t^2}} dt\right)^2 = \left(\int \frac{1}{1-t^2} dt\right)^2 = \left(\frac{1}{2} \log \left|\frac{t}{1-t}\right| \right) \Big|_0^1 = \infty \Rightarrow h(t) \notin L^2(R)$

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e) from last part (b) we know that for $\chi_{n} = \begin{cases} n^{\frac{1}{p}} & \text{n>0} \\ 0 & \text{n} \neq 0 \end{cases}$ $\chi_{n} = \begin{cases} n^{\frac{1}{p}} & \text{n>0} \\ 0 & \text{n} \neq 0 \end{cases}$ $\chi_{n} \notin \mathbb{R}^{p} \quad \chi_{n} \notin \mathbb{R}^{p}, q \neq 0 \end{cases}$ $\chi_{n} \notin \mathbb{R}^{p} \quad \chi_{n} \notin \mathbb{R}^{p}, q \neq 0 \end{cases}$ $\chi_{n} \notin \mathbb{R}^{p} \quad \chi_{n} \notin \mathbb{R}^{p}, q \neq 0 \end{cases}$ $\chi_{n} \notin \mathbb{R}^{p} \quad \chi_{n} \notin \mathbb{R}^{p}, q \neq 0 \end{cases}$ $\chi_{n} \notin \mathbb{R}^{p} \quad \chi_{n} \notin \mathbb{R}^{p}, q \neq 0 \end{cases}$ $\chi_{n} \notin \mathbb{R}^{p} \quad \chi_{n} \notin \mathbb{R}^{p}, q \neq 0 \end{cases}$ $\chi_{n} \notin \mathbb{R}^{p} \quad \chi_{n} \notin \mathbb{R}^{p}, q \neq 0 \end{cases}$ $\chi_{n} \notin \mathbb{R}^{p} \quad \chi_{n} \notin \mathbb{R}^{p}, q \neq 0 \end{cases}$ $\chi_{n} \notin \mathbb{R}^{p} \quad \chi_{n} \notin \mathbb{R}^{p}, q \neq 0 \end{cases}$ $\chi_{n} \notin \mathbb{R}^{p} \quad \chi_{n} \notin \mathbb{R}^{p}, q \neq 0 \end{cases}$ $\chi_{n} \notin \mathbb{R}^{p} \quad \chi_{n} \notin \mathbb{R}^{p}, q \neq 0 \end{cases}$ $\chi_{n} \notin \mathbb{R}^{p} \quad \chi_{n} \notin \mathbb{R}^{p}, q \neq 0 \end{cases}$ $\chi_{n} \notin \mathbb{R}^{p} \quad \chi_{n} \notin \mathbb{R}^{p}, q \neq 0 \end{cases}$ $\chi_{n} \notin \mathbb{R}^{p} \quad \chi_{n} \notin \mathbb{R}^{p}, q \neq 0 \end{cases}$ $\chi_{n} \notin \mathbb{R}^{p} \quad \chi_{n} \notin \mathbb{R}^{p} \quad \chi_{n} \notin \mathbb{R}^{p}, q \neq 0 \end{cases}$ $\chi_{n} \notin \mathbb{R}^{p} \quad \chi_{n} \notin \mathbb{R}^{p} \quad \chi_{n} \notin \mathbb{R}^{p}, q \neq 0 \end{cases}$ $\chi_{n} \notin \mathbb{R}^{p} \quad \chi_{n} \notin \mathbb{R}$