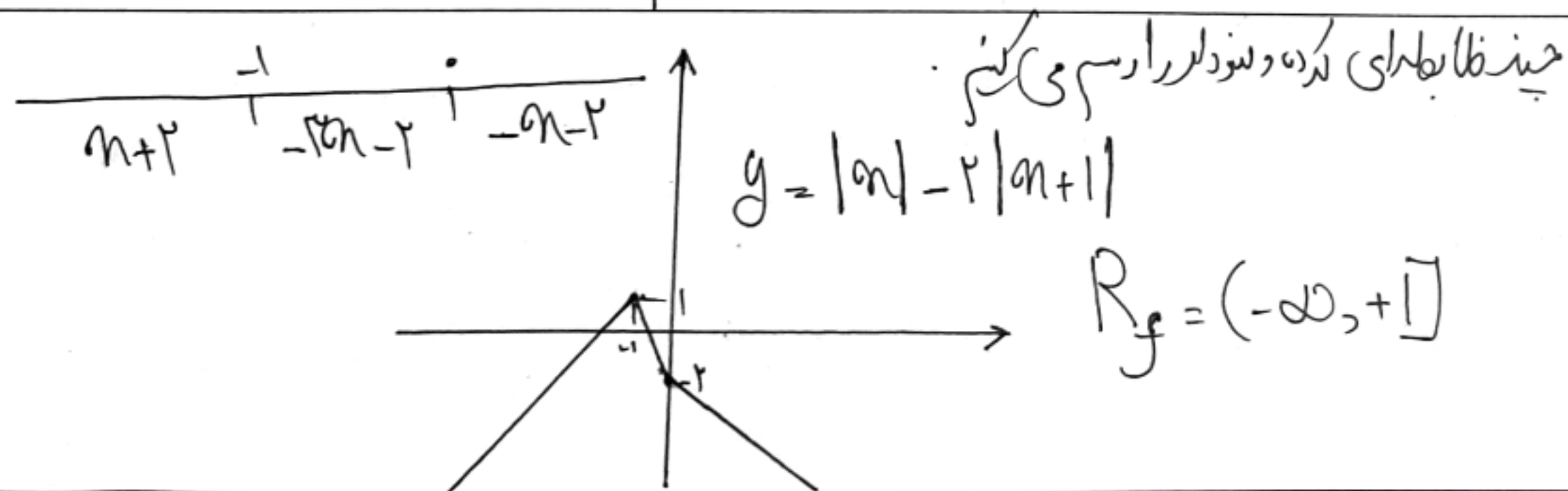
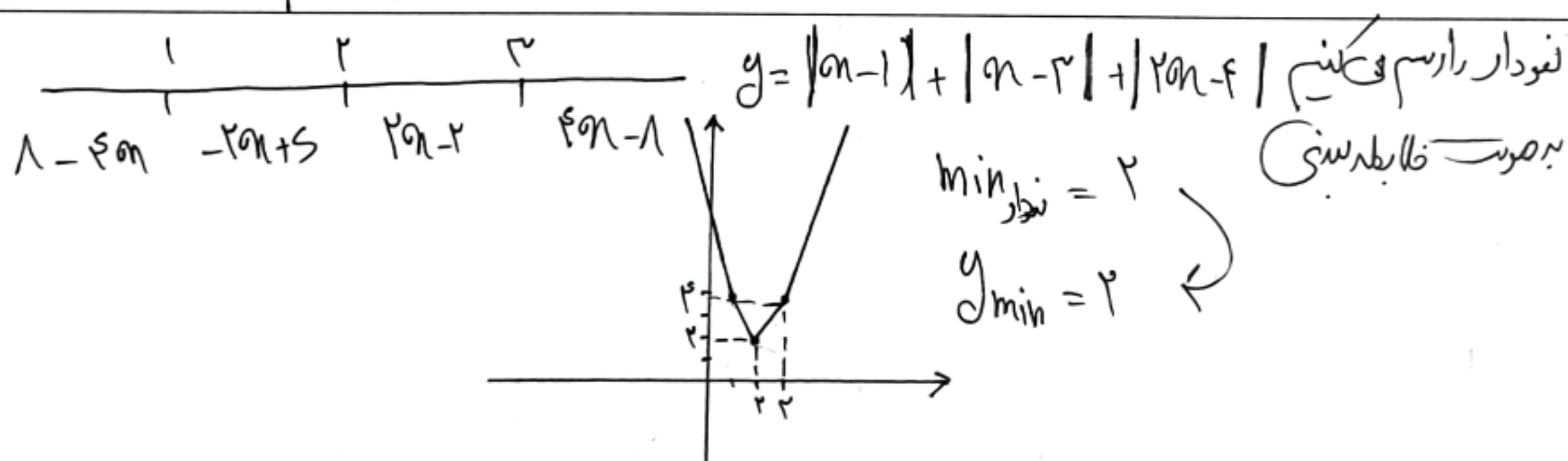
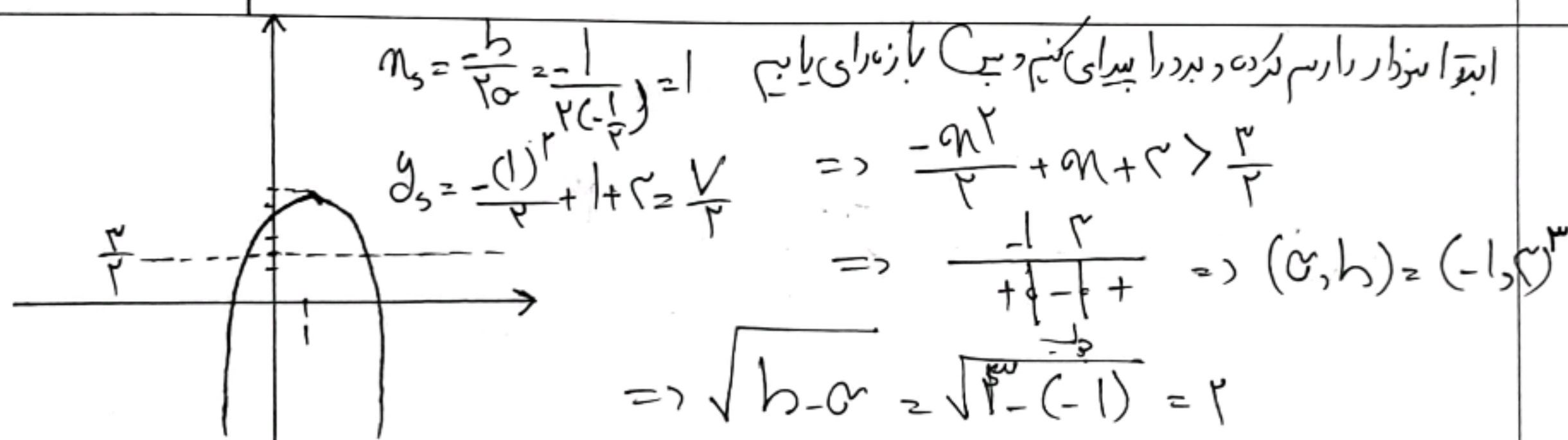
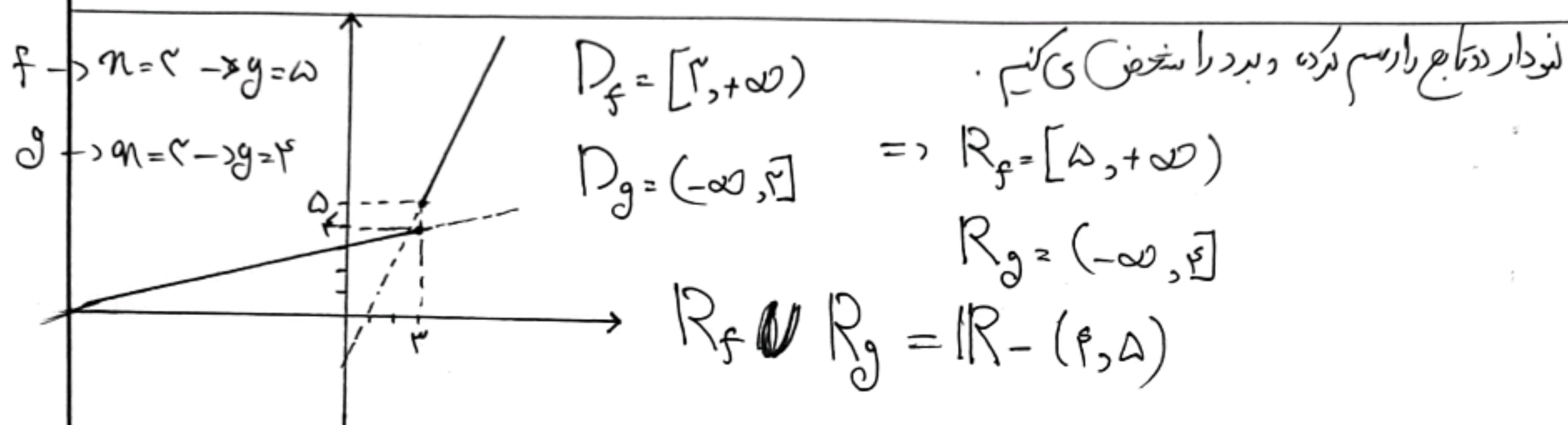


باید دانست در تابع باید باشد پس $D_g = \{-1, 0, 1, 2\}$ و $D_f = [-1, 1] \Rightarrow D_g \cap D_f = \{-1, 0, 1\}$

$\Rightarrow n = -1 \Rightarrow 2(1) - 2(0) = 2 \Rightarrow (-1, 2) \Rightarrow 2g - 2f = \{(-1, 2), (0, 5), (1, 4)\}$

$\Rightarrow n = 0 \Rightarrow 2(1) - 2(0) = 2 \Rightarrow (0, 5) \Rightarrow 2 + 5 + 4 = 11$

$\Rightarrow n = 1 \Rightarrow 2(2) - 2(0) = 4 \Rightarrow (1, 4)$



ابتدا برد تابع را بدست می آوریم
بین دو نقطه ۱ و ۲
تغییر می کنیم

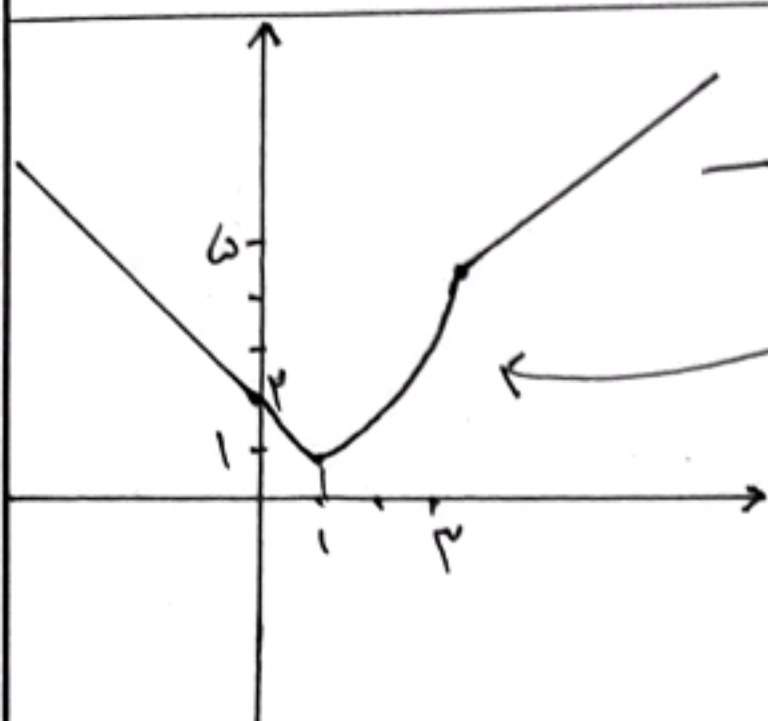
$$g = \frac{n^2 + 5n + m}{n+1} \Rightarrow gn + g = n^2 + 5n + m$$

$$\Rightarrow n^2 + (5-g)n + m-g = 0 \quad \Delta \geq 0 \Rightarrow g^2 + 10 - 4g - 4m + 4g > 0$$

$$\Rightarrow \frac{b}{2a} = 2 \Rightarrow 2^2 - 10 + 4 - 4m = 14 - 4m > 0 \Rightarrow m < 4$$

چون اعداد طبیعی هستند پس تنها مقادیر $m = \{1, 2, 3\}$ ممکن است.

نمودار تابع را رسم کرده و برد را می یابیم

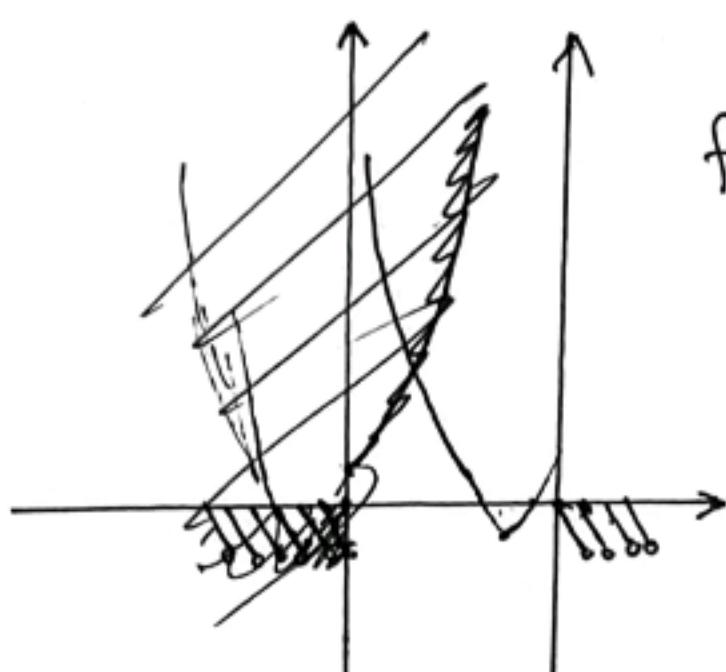


$$n \geq 2 \rightarrow n+2$$

$$n^2 - 2n + 2 \rightarrow 1 \leq n < 2 \rightarrow n_3 = 1 \quad g_3 = 1$$

$$|n| + 2 \rightarrow n < 0 \rightarrow -n + 2$$

$$R_f = [1, +\infty)$$



نمودار تابع را رسم می کنیم و برد را می یابیم

$$f(n) = \begin{cases} n^2 + 4n + 2 & n \leq 0 \\ (4n) - 2n & n > 0 \end{cases} \quad \begin{cases} n_3 = -2 \\ g_3 = -1 \end{cases}$$

$$R_f = [-1, 0] \cup [2, +\infty)$$

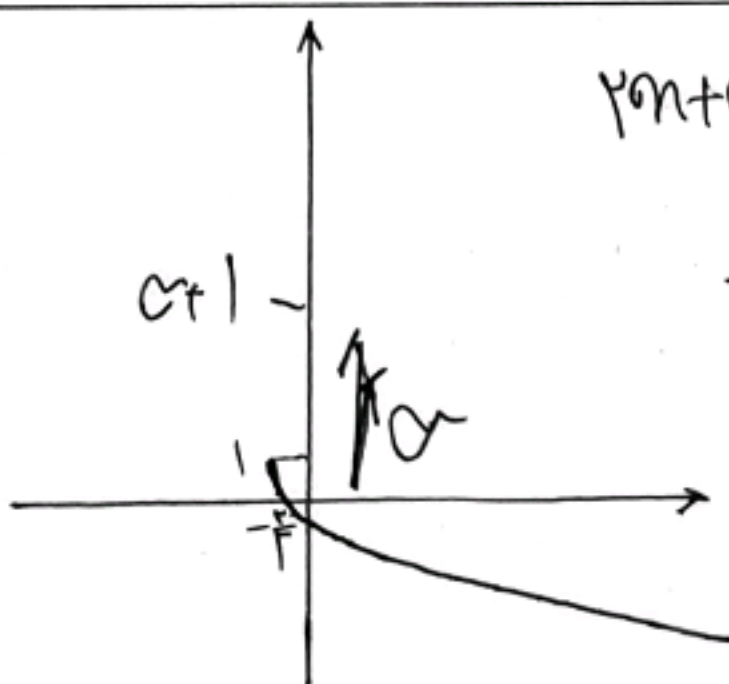
$$\Rightarrow R_f = [0, 2] \cup [2, +\infty) = [0, +\infty)$$

نمودار $\sqrt{2n+2}$ را رسم می کنیم و اشتناک می دهیم

$$2n+2 \geq 0 \Rightarrow n \geq -1$$

$$\Rightarrow 0+1=1 \Rightarrow 0=1 \Rightarrow \frac{1}{2} = \frac{1}{2} = 0.5$$

$$R_f = (-\infty, 1]$$



$$2 + 2\sqrt{1-n^2} = ((\sqrt{n+1}) + (\sqrt{1-n}))^2 \Rightarrow f(n) + g(n) = 2(\sqrt{n+1} + \sqrt{1-n})$$

$$\Rightarrow 2\sqrt{n+1} + 2\sqrt{1-n} \Rightarrow y = \frac{f(n)}{2} - \frac{g(n)}{2} \Rightarrow R_f = R_g = [-1, 1]$$

$$\Rightarrow \frac{2(\sqrt{n+1} + \sqrt{1-n})}{2} - \frac{2(\sqrt{n+1} + \sqrt{1-n})}{2}$$

$$= \frac{\sqrt{n+1} + 2\sqrt{1-n} - \sqrt{n+1} - \sqrt{1-n}}{2} \Rightarrow y = \sqrt{1-n} \Rightarrow R_g = [-1, 1]$$

$$R_g = [0, 2]$$