

$$y = a(x-h)^2 + k, (4, 3) \Rightarrow y = -\frac{1}{3}(x-4)^2 + 3 \quad (2) \quad 2$$

$$\Rightarrow -\frac{1}{3}(x-4)^2 + 3 = 0 \Rightarrow (x-4)^2 = 9 \rightarrow x-4 = 3 \rightarrow x = 7$$

$$\rightarrow x-4 = -3 \rightarrow x = 1$$

نسبت

چون قوی تابع اولیه مقدار a رو داریم می توانیم با استفاده از کلاس جدول خطه تابع جدید رو بنویسیم و ریشه ها را پیدا کنیم.

$$f(1) = 4 \rightarrow 2n + 2 = 1 \rightarrow 2n = -1 \rightarrow n = -\frac{1}{2} \quad (2) \quad 2$$

$$y = 1 - 2f(1) = 1 - 2(4) = -7 \rightarrow A = \left(-\frac{1}{2}, -7\right) \rightarrow \alpha = -\frac{1}{2}, \beta = -7$$

$$\Rightarrow \alpha \cdot \beta = -\frac{1}{2} \times -7 = \frac{7}{2} \quad \checkmark$$

$$D_{f(n)} = (a, 4] \rightarrow D_{f(n+1)} = (a+1, 5] \quad (2) \quad 1$$

$$D_{g(n)} = [-1, b) \rightarrow D_{g(n+1)} = [-2, b-1)$$

$$\Rightarrow (a+1, 5] \cap [-2, b-1) = (-2, 5) \rightarrow a+1 = -2 \rightarrow a = -3$$

$$\rightarrow b-1 = 5 \rightarrow b = 6$$

$$a - b = -3 - 6 = -9 \quad \checkmark$$

$$-3 \leq x \leq 5 \rightarrow -\frac{3}{2} \leq \frac{x}{2} \leq \frac{5}{2} \rightarrow -\frac{1}{2} \leq \frac{x}{2} + 1 \leq \frac{7}{2} \rightarrow D = \left[-\frac{1}{2}, \frac{7}{2}\right] \quad (2) \quad 4$$

$$-1 \leq y \leq 2 \rightarrow -2 \leq 2y \leq 4 \rightarrow -5 \leq 2y - 3 \leq 1 \rightarrow 0 \leq |2y - 3| \leq 5$$

$$\rightarrow 0 \leq \sqrt{|2y - 3|} \leq \sqrt{5} \rightarrow R = [0, \sqrt{5}] \quad \checkmark$$

$$g(n) = \left| \frac{x-2+1}{2(n-2)+1} \right| + 1 = \left| \frac{x-1}{2n-3} \right| + 1 \quad x+1 + \left| \frac{x-1}{2n-3} \right| < 0 \quad (2) \quad 10$$

همیشه منفی

MR

$$\rightarrow x+1 < 0 \rightarrow x < -1 \rightarrow \frac{x-1}{2n-3} > 0 \rightarrow \text{مقادیر مثبت و منفی را بداریم}$$

Subject.

Day. Month. Year.

$$x+1 + \frac{x-1}{2x-3} < 0 \iff \frac{(x+1)(2x-3) + (x-1)}{2x-3} < 0$$

$$\iff \frac{2x^2 - x}{2x-3} < 0 \iff \frac{x(x-1/2)}{2x-3} < 0$$

Number line analysis for $x < -1$:

x	x	$x - 1/2$	$2x - 3$
$-\infty$	-	-	-
-1	+	-	-
$-\sqrt{2}$	+	-	-
-1/2	+	0	-
$\sqrt{2}$	+	+	-
3/2	+	+	0
∞	+	+	+

Signs: $-$ $+$ $-$ $+$ $-$ $+$ $+$ $+$

Shaded regions: $(-1, -\sqrt{2})$ and $(\sqrt{2}, 3/2)$

$$\Rightarrow \text{مجموعة } x = (-\infty, -\sqrt{2})$$