$-\frac{3}{2}+1 \leq x \leq \frac{3}{2}+1$

$\boxed{-\frac{1}{2} \leq x \leq \frac{7}{2}}$ → دامنه تابع

$y_2 = \sqrt{|2f(x)-3|}$

↳ ضابطه‌ی تابع

$-2 \leq 2f(x) \leq 4$

$-5 \leq 2f(x)-5 \leq 1$

$0 \leq |2f(x)-3| \leq 5$

$\boxed{R_f = [0, \sqrt{5}]}$

$\boxed{D_f = [-\frac{1}{2}, \frac{7}{2}]}$

۱۰

$f(x) = \left|\frac{x+1}{2x+1}\right| \xrightarrow[x-2]{\text{۲ واحد به راست}} \left|\frac{x-2+1}{2x-4+1}\right| = \left|\frac{x-1}{2x-3}\right|$

↓ ۱ واحد به بالا

$g(x) = \left|\frac{x-1}{2x-3}\right| + 1$

$x+1+\left|\frac{x-1}{2x-3}\right| < 0$

$\left|\frac{x-1}{2x-3}\right| < -(x+1) \longrightarrow x+1 < \frac{x-1}{2x-3} < -(x+1)$

$2x^2-3x+2x-2 \gtrless x-1$

$2x^2-2x-2 \gtrless 0 \longrightarrow x^2-x-1 > 0$

$+ \quad 1-\sqrt{5} \quad - \quad 1+\sqrt{5} \quad +$

۶) انتقال تابع:

$f(x) \longrightarrow f(x-a)+b$

$f(x) = -\frac{1}{3}x^2 + \frac{2}{5}x + 1$

$x_{ex} = \frac{-b}{2a} = \frac{-\frac{2}{5}}{-\frac{2}{3}} = \frac{3}{5}$

$f(\frac{3}{5}) = \frac{28}{25}$

$4 - a = \frac{3}{5}$ $\qquad a = 4 - \frac{3}{5} = \frac{17}{5}$

$3 = \frac{28}{25} + b$ $\qquad b = \frac{47}{25}$

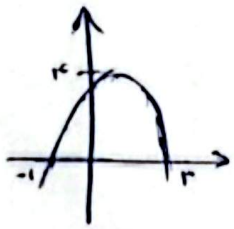
$f(x - \frac{17}{5}) + \frac{47}{25}$

جایگذاری

$y = -\frac{1}{3}(x - \frac{17}{5})^2 + \frac{2}{5}(x - \frac{17}{5}) + 1 + \frac{47}{25}$

$x^2 + \frac{289}{25} - \frac{34}{5}x$

$-\frac{1}{3}x^2 - \frac{1}{3}\frac{289}{25} + \frac{34}{15}x + \frac{2}{5}x - \frac{34}{25} + 1 + \frac{47}{25} = 0$



$f(1) = 4$ $\longrightarrow$ نقطه متناظر

۷)

$y = 1 - 2f(3x+2) = -7$

$3x + 2 = 1$

$3x = -1$

$x = -\frac{1}{3}$ $\qquad \boxed{\alpha\beta = \frac{7}{3}}$

۸)

$D_f = (a, 4]$ $\qquad D_g = [-1, b)$

$a < x \leq 4$

$-1 \leq x < b$

$-1 \leq x+1 < b$

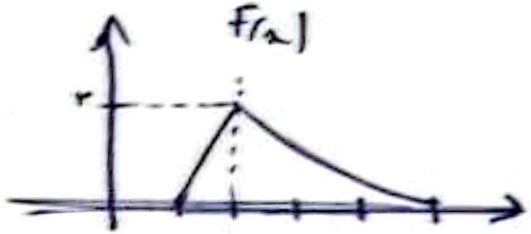
$a < x-1 \leq 4$ $\qquad -2 \leq x \leq b-1$

$a+1 < x \leq 5$ $\qquad \cap$

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

$a + 1 = -2$ $\qquad a = -3$

$a - b = -9$



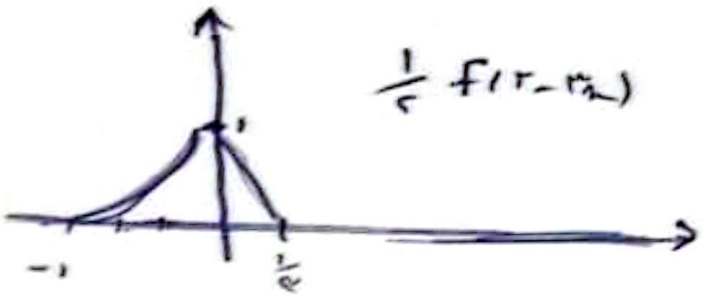
$۱ \leq x \leq ۵$

$۱ \leq ۲ - ۳x \leq ۵$

$-۱ \geq ۳x - ۲ \geq -۵$

$۱ \geq ۳x \geq -۳$

$\frac{۱}{۳} \geq x \geq -۱$



$f(۲) = ۲$

$۲ - ۳x = ۲ \longrightarrow x = ۰$

$y = -۱$ ، ۰ ، ۲ ، ۱ ، ۲ .

۵

$f(1)$ $\quad 0 < x < 1$

بیشترین دامنه مشتق f :

۱

$D_{f(x)} = [-2, 4]$ $\quad -2 \leq \frac{3x+2}{5} \leq 4$

$-10 \leq 3x + 2 \leq 20$

$-12 \leq 3x \leq 18 \quad -4 \leq x \leq 6$

$D_{f'(x)} = \boxed{[-4, 6]}$

۲

$\cancel{3(-4)-2} \leq x \leq \cancel{3(6)-2}$

$-8 \qquad 7$

$D_{f'(x)} = [-8, 7]$

سؤال سه: این شیوه نوشتن اصلاً معادله برای ورودی تابع برای نمایی مناسبه؟

۳

$\frac{3(-1)+1}{2} \leq \quad < \frac{3(3)+1}{2}$

$-1 \leq 2 - 5x < 5$

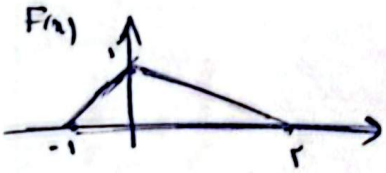
$+1 \geq 5x - 2 > -5$

$3 \geq 5x > -3$

$\frac{3}{5} \geq x > -\frac{3}{5}$

$D'_{f(x)} = \left(-\frac{3}{5}, \frac{3}{5}\right]$

۴

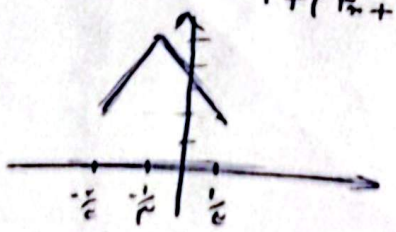


$2F(3x+1) + 3$

$-1 \leq 3x + 1 \leq 2$

$-2 \leq 3x \leq 1$

$-\frac{2}{3} \leq x \leq \frac{1}{3}$



$3x + 1 = 0$

$x = \frac{-1}{3}$

$x = 0 \rightarrow F(3(0)+1) = F(1) = \frac{1}{2}$

$2F(1) + 3 = 4$