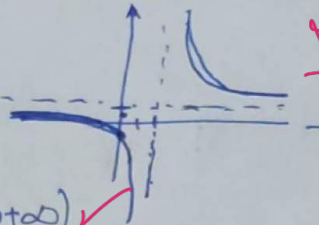
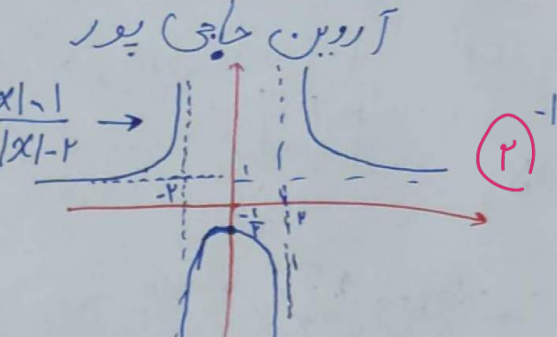
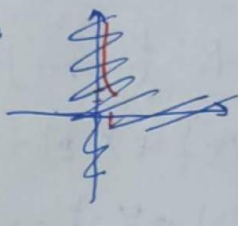


الف $y = \frac{|x|-1}{|x|-2} \rightarrow \frac{x-1}{x-2}$  $\Rightarrow Rf = (-\infty, -\frac{1}{2}] \cup (1, +\infty)$ ✓

آر وین حاجی پور  $\Rightarrow Rf = [2, +\infty)$

راه حل تستی هم داره بجز رسم مرحله مرحله آر وین
 نو تذکره ۱ سوال ۱ تکلیف قبلیتون توفیق

ب: $\frac{x^2-1}{|x|} \rightarrow \frac{x^2-1}{x}$  $\Rightarrow Rf = (-\infty, -1] \cup [1, +\infty)$

$\frac{x^2-1}{|x|} = \frac{|x|^2-1}{|x|} = |x| - \frac{1}{|x|} \Rightarrow |x| - \frac{1}{|x|} \geq 2$

$y = \frac{x^2-2x-2}{x+3} \Rightarrow x^2-2x-2 = y(x+3) \Rightarrow x^2 - (2+y)x - (2+3y) = 0$
 $\Rightarrow x = \frac{-(2+y) \pm \sqrt{(2+y)^2 + 4(2+3y)}}{2} \Rightarrow y^2 + 8y + 12 \geq 0$
 $(y+6)(y+2) \geq 0$
 $\Rightarrow Rf = (-\infty, -6] \cup [-2, +\infty)$ ✓

الف: $-x^2-4x-1 \geq 0 \Rightarrow x^2+4x+1 \leq 0$
 $\Delta = 16-4 = 12 \Rightarrow \sqrt{12} = 2\sqrt{3}$
 $x = \frac{-4 \pm 2\sqrt{3}}{2} = -2 \pm \sqrt{3}$
 $\Rightarrow Rf = [-2-\sqrt{3}, -2+\sqrt{3}]$ ✓

ب: $2x^2-18x \rightarrow 2x(x-9) \Rightarrow \frac{x}{x-9} \geq 1$
 $\Rightarrow x \geq x-9 \Rightarrow 9 \geq 0$
 $\Rightarrow Rf = [9, +\infty)$ ✓

ج: $x^2-x-1 \neq 0 \Rightarrow \Delta = 1+4 = 5 > 0$
 $\Rightarrow Rf = R$ ✓

برای استفاده از روش دلتا ضریب جانب افقی = ۱
 جانب قائم = ۰

بر: $\frac{(x-\frac{1}{2})^2}{x^2+x+1}$
 $\Rightarrow (x-\frac{1}{2})^2 \geq 0$
 $\Rightarrow Rf = [0, +\infty)$ ✓

خودش نیست $\Rightarrow -3y^2+3y \geq 0$
 $\Rightarrow y(1-y) \geq 0$
 $\Rightarrow Rf = [0, 1]$ ✓

الف: $\log(x^3 - x + 1) \Rightarrow x^3 - x + 1 > 0 \Rightarrow x(x^2 - 1) > -1$ (2) د

$(x-1)(x+1)$

$\rightarrow R = (-\infty, +\infty) \Rightarrow \log(-\infty, +\infty) \Rightarrow \log(0, +\infty)$

$Rf = (-\infty, +\infty)$

ب: $\log\left(\frac{x^2+1}{x}\right) > 0 \Rightarrow x > \frac{1}{x} \Rightarrow \log(1, +\infty) \rightarrow Rf = [1, +\infty)$

$\rightarrow R = (-\infty, -1] \cup [1, +\infty)$ (1)

الف: $x \leq 1 \rightarrow -2x - 2 + x + 3 \rightarrow -x - 1$

$3 > x > 1 \rightarrow 2x - 2 + x - 3 \rightarrow 3x - 5$

$x \geq 3 \rightarrow 2x - 2 - x + 3 \rightarrow x + 1$

$Rf = [2, +\infty)$

ب: $|x-3| + |x+1| \Rightarrow Rf = [5, +\infty)$

$|x-2| - |2x+2| \rightarrow$

$\downarrow \quad \downarrow$

$2 \quad -1$

$x \geq 2 \rightarrow x - 2 - 2x - 2 = -x - 4$

$x \leq -1 \rightarrow -x - 2 + 2x + 2 = x$

$-1 < x < 2 \rightarrow -x - 2 - 2x - 2 = -3x - 4$

$x = -3$

$x = -\frac{4}{3}$

$(-\infty, -3] \cup [-\frac{4}{3}, +\infty)$

نقطه گذاری: $-2, 0, -\frac{1}{2}, 2$

$\Rightarrow Rf = (-\infty, +\infty)$

الف: -2 ابتدا و انتها بازه نقطه گذاری و کلاً اعداد صحیح نقطه گذاری

$[-1, 0)$

$[0, 1)$

$[1, 2)$

2

نقطه گذاری:

$Rf = \{2, 3\}$

$3x + 2 = -5 \Rightarrow 3x = -7 \Rightarrow x = -\frac{7}{3}$

$3x - 1 = 0 \Rightarrow 3x = 1 \Rightarrow x = \frac{1}{3}$

$3x - 2 = 0 \Rightarrow 3x = 2 \Rightarrow x = \frac{2}{3}$

$Rf = [2, 3]$

الف : $\sin^{\mu} - \sin^{\nu} \rightarrow \frac{\max}{\min} +1 \Rightarrow \dots | + | + | = \boxed{\mu_{\max}}$
 $\Rightarrow \dots = | + | + | = +1$
 $\frac{b}{\mu a} = \frac{1}{\mu} = \frac{1}{\mu} - \frac{1}{\nu} + 1 = \frac{\mu}{\nu}$
 ب : $\sin^{\mu} + \sin^{\nu} \rightarrow \dots$
 $\min = -\frac{b}{\mu a} \rightarrow -\frac{1}{\mu} \rightarrow \dots$
 $0 \rightarrow +1$
 $1 \rightarrow \mu \rightarrow \boxed{1, \mu}$
 $\boxed{\frac{\mu}{\nu}, \mu}$
 $\boxed{2}$