

$g = \frac{u+1}{u-2}$ $g = 2$ $g = 3$ $g = -\frac{1}{2}$ $f^{-1}(u) = y = \frac{u+1}{u-2} \Rightarrow y(u-2) = u+1 \Rightarrow yu - 2y = u+1 \Rightarrow yu - u = 2y+1 \Rightarrow u(y-1) = 2y+1 \Rightarrow u = \frac{2y+1}{y-1}$ $yu - 2y = u+1 \Rightarrow u(y-1) = 2y+1 \Rightarrow u = \frac{2y+1}{y-1}$	$g = \frac{u+1}{u-2}$ $f^{-1}(u) = y = \frac{u+1}{u-2}$
$f(u) = u-1 - u-2 \Rightarrow$ آزمون برابری $[a, b] \Rightarrow [1, 3] \Rightarrow$ $1 \leq u \leq 3 \Rightarrow u-1 + u-2 \Rightarrow 2u-3$ $\Rightarrow y = 2u-3 \Rightarrow y+3 = 2u \Rightarrow u = \frac{y+3}{2} \Rightarrow y = \frac{u+3}{2}$ $f^{-1}(u)$	$f(u) = u-1 - u-2$
$f(u) = \begin{cases} u^2 + \epsilon & u \geq 1 \\ \epsilon u - 1 & u \leq 1 \end{cases} \Rightarrow$ $y = \sqrt{u-1}$ $u^2 + \epsilon = y \Rightarrow u = \sqrt{y-\epsilon} \Rightarrow u = \sqrt{y-\epsilon}$ $\epsilon u - 1 = y \Rightarrow \epsilon u = y+1 \Rightarrow u = \frac{y+1}{\epsilon} \Rightarrow y = \frac{u+1}{\epsilon}$ $\Rightarrow f(u) = \begin{cases} \sqrt{u-1} & u \geq 1 \\ \frac{u+1}{\epsilon} & u \leq 1 \end{cases}$	$f(u) = \begin{cases} \sqrt{u-1} & u \geq 1 \\ \frac{u+1}{\epsilon} & u \leq 1 \end{cases}$
$f(u) = u^2 - \frac{(u+1)^2}{u+2} \Rightarrow \frac{u^2(u+2) - (u+1)^2}{u+2} = \frac{u^3 + 2u^2 - u^2 - 2u - 1}{u+2} = \frac{u^3 + u^2 - 2u - 1}{u+2}$ $\Rightarrow \frac{-1-2u}{u+2} \Rightarrow y(u+2) = -1-2u \Rightarrow yu + 2y = -1-2u \Rightarrow u(y+2) = -1-2y \Rightarrow u = \frac{-1-2y}{y+2}$ $u = \frac{-1-2y}{y+2} \Rightarrow u = \frac{-1-2y}{y+2} \Rightarrow y = \frac{-2u-1}{u+2} \Rightarrow \frac{-4u-2}{2u+4} \Rightarrow f^{-1}(b) \Rightarrow b = -2$ $\Rightarrow \frac{-4(-2)-2}{2(-2)+4} = \frac{8-2}{-4+4} = \frac{6}{0} = \infty \Rightarrow f^{-1}(b) = \infty$	$f(u) = u^2 - \frac{(u+1)^2}{u+2}$
$y = \frac{u}{u^2+1} \Rightarrow u = \frac{y}{y^2+1} \Rightarrow uy^2 + u = y \Rightarrow uy^2 - y + u = 0$ $\frac{b \pm \sqrt{\Delta}}{2a} \Rightarrow \frac{1 \pm \sqrt{1-4\epsilon u^2}}{2u} \Rightarrow y = \frac{1 \pm \sqrt{1-4\epsilon u^2}}{2u}$ $y = \frac{1 - \sqrt{1-4\epsilon u^2}}{2u}$ در این فایده معکوس که عدد معکوس	$y = \frac{1 - \sqrt{1-4\epsilon u^2}}{2u}$