

(18)

$$\frac{1}{x-1} - \frac{1}{x+1} < 1$$

$$\begin{aligned} x-1 &\neq 0 & \text{so } x+1 &\neq 0 \\ x &\neq 1 & & x &\neq -1 \end{aligned}$$

~~Handwritten text~~

$$\frac{1}{x-1} - \frac{1}{x+1} < 1$$

$$\frac{1}{x-1} - \frac{1}{x+1} - 1 < 0$$

$$\frac{x+1}{x^2-1} - \frac{x-1}{x^2-1} - \frac{x^2-1}{x^2-1} < 0$$

$$\frac{x+1 - x+1 - x^2+1}{x^2-1} < 0$$

$$\frac{-x^2+3}{x^2-1} < 0$$

Now we solve $-x^2+3=0$

$$x = \pm\sqrt{3}$$

	$-\sqrt{3}$	$-$	1	$\sqrt{3}$	
$-x^2+3$	$-$	$+$	$+$	$+$	$-$
x^2-1	$+$	$+$	$-$	$+$	$+$
$f(x)$	$-$	$+$	$-$	$+$	$-$

valid $x < -\sqrt{3}$, $-1 < x < 1$ and $x > \sqrt{3}$