Betragsungleichung

$$\left|\frac{4x-4}{2x-1}\right| < 3$$

<table>
<tr><td colspan="2">Fall 1:
$\frac{4x-4}{2x-1} \geq 0$</td><td colspan="2">Fall 2:
$\frac{4x-4}{2x-1} < 0$</td></tr>
<tr><td>Fall 1.1.:</td><td>Fall 1.2.:</td><td>Fall 2.1.:</td><td>Fall 2.2.:</td></tr>
<tr><td>$4x-4 \geq 0$ & $2x-1 > 0$
$4x \geq 4$ & $2x > 1$
$x \geq 1$ & $x > \frac{1}{2}$
$\boldsymbol{x \geq 1}$</td><td>$4x-4 < 0$ & $2x-1 < 0$
$4x < 4$ & $2x < 1$
$x < 1$ & $x < \frac{1}{2}$
$\boldsymbol{x < \frac{1}{2}}$</td><td>$4x-4 \geq 0$ & $2x-1 < 0$
$4x \geq 4$ & $2x < 1$
$x \geq 1$ & $x < \frac{1}{2}$
  </td><td>$4x-4 < 0$ & $2x-1 > 0$
$4x < 4$ & $2x > 1$
$x < 1$ & $x > \frac{1}{2}$
$\boldsymbol{\frac{1}{2} < x < 1}$</td></tr>
<tr><td>$\frac{4x-4}{2x-1} < 3$
$4x-4 < 6x-3$
$-1 < 2x$
$\boldsymbol{-\frac{1}{2} < x}$</td><td>$\frac{4x-4}{2x-1} < 3$
$4x-4 > 6x-3$
$-1 > 2x$
$\boldsymbol{-\frac{1}{2} > x}$</td><td></td><td>$-\left(\frac{4x-4}{2x-1}\right) < 3$
$\frac{4x-4}{2x-1} > -3$
$4x-4 > -6x+3$
$\boldsymbol{x > \frac{7}{10}}$</td></tr>
<tr><td>$\Rightarrow \mathbb{L}_{1.1} = [1;+\infty)$</td><td>$\Rightarrow \mathbb{L}_{1.2} = \left(-\infty; -\frac{1}{2}\right)$</td><td>$\Rightarrow \mathbb{L}_{2.1} = \{\ \}$</td><td>$\Rightarrow \mathbb{L}_{1.2} = \left(\frac{7}{10}; 1\right)$</td></tr>
<tr><td colspan="4">$\Rightarrow \mathbb{L}_{\boldsymbol{ges.}} = \mathbb{R} \setminus \left[-\frac{\mathbf{1}}{\mathbf{2}}; \frac{\mathbf{7}}{\mathbf{10}}\right]$</td></tr>
</table>