

M102 #2 SOLUTIONS

1. CASE I : $3x+5 \geq 0$

$$\Rightarrow 3x+5 = 2x-1$$

$$x = -6$$

CHECK:

$$|-18+5| = -12-1$$

$$13 = -13 \quad \times$$

NOT A SOLUTION!

CASE II : $3x+5 < 0$

$$-(3x+5) = 2x-1$$

$$-5x = 4$$

$$x = -\frac{4}{5}$$

CHECK

$$|-\frac{12}{5}+5| = -\frac{8}{5}-1$$

$\times$

NOT A SOLUTION!

$\Rightarrow$ THIS EQUATION HAS NO SOLUTIONS!

$$\begin{aligned} 2. \quad \frac{f(a+b)-f(a)}{b} &= \frac{\frac{1}{(a+b)+1} - \frac{1}{a+1}}{b} \\ &= \frac{\frac{(a+1)-(a+b+1)}{(a+b+1)(a+1)}}{b} = \frac{-1}{(a+b+1)(a+1)} \end{aligned}$$

3. NEED $5x+2 > 0$

HENCE DOMAIN IS ALL $x > -\frac{2}{5}$