COMPLEX LOGARITHM QUESTION 9/2/23

$\log_{10} x-1 + 2 = \log_{10} 3x+2 + \log_{10} 25$

Rearrange the equation to equal to 2

$= \log_{10} 3x+2 + \log_{10} 25 - \log_{10} x-1 = 2$

$= \log_{10} 3x+2 + \log_{10} 25 - \log_{10} x-1 = 2 \cdot \log_{10} 10$

$= \log_{10} 3x+2 + \log_{10} 25 - \log_{10} x-1 = \log_{10} 10^2$

$= \log_{10} 3x+2 + \log_{10} 25 - \log_{10} x-1 = \log_{10} 100$

$= \log_{10} (3x+2)(25) - \log_{10} x-1 = \log_{10} 100$

Now divide the two since we have the same base

$= \log_{10} \frac{75x+50}{x-1} = \log_{10} 100$

Now simplify since the bases are the same

$= \frac{75x+50}{x-1} = 100$

$= 100x - 100 = 75x + 50$

$= 100x - 75x = 50 + 100$

$= 25x = 150$

Since when you multiply 25 by a number you get 150 then $x = 150/25$ $x = 6$