Practice using the Rules and Axioms

Ex) Follow the directions given in the order given

$$\frac{6(x+1)}{7} - 3 = \frac{3x-1}{14} - \frac{1}{7}$$

M_{14}, D.A., C.L.T., A_{30}, S_{3x}, Dq

1) M_{14}: $14\left[\frac{6(x+1)}{7} - 3\right] = \left[\frac{3x-1}{14} - \frac{1}{7}\right]14$

$$\frac{14 \cdot 6(x+1)}{7} - 42 = \frac{14 \cdot (3x-1)}{14} - \frac{14 \cdot 1}{7}$$

$$2 \cdot 6(x+1) - 42 = (3x-1) - 2 \cdot 1$$

$$12(x+1) - 42 = (3x-1-2$$

2) D.A.: $12x + 12 - 42 = 3x - 1 - 2$

3) C.L.T.: ~~$12x + 9 = 3x - 3$~~ $12x - 30 = 3x - 3$

4) A_{30}: $12x - 30 + 30 = 3x - 3 + 30$

$$12x = 3x + 27$$

5) S_{3x}: $12x - 3x = 3x + 27 - 3x$

$$9x = 27$$

6) Dq: $\frac{9x}{9} = \frac{27}{9}$

$$\boxed{x = 3}$$

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Ex) Follow the directions given in the order given

$$\frac{6x+25}{3} - \frac{4}{3} = \frac{12x-5}{3} + 7$$

M_3, C.L.T., S_{6x}, S_{16}, D_6

1) M_3: $3\left[\frac{6x+25}{3} - \frac{4}{3}\right] = \left[\frac{12x-5}{3} + 7\right]3$

$$\frac{3\cdot(6x+25)}{3} - \frac{3\cdot 4}{3} = \frac{3\cdot(12x-5)}{3} + 7\cdot 3$$

$$6x+25-4 = 12x-5+21$$

2) C.L.T.: $6x+21 = 12x+16$

3) S_{6x}: $6x+21-6x = 12x+16-6x$

$$21 = 6x+16$$

4) S_{16}: $21-16 = 6x+16-16$

$$5 = 6x$$

5) D_6: $\frac{5}{6} = \frac{6x}{6}$

$$\boxed{\frac{5}{6} = x}$$