

1. For each problem below, determine whether or not the solution is true or false. If it is false, correct it:

a. $\frac{12x^3+20x^2+23x+9}{2x+1} = 6x^2 + 7x + 8$

b. $\frac{3x}{x+2} + \frac{6}{x+2} = 3$

c. $\frac{x}{x-1} - \frac{1}{x+1} = 1$

d. $\frac{x+5}{x-2} \cdot \frac{2(x-2)^2}{(x+5)^2} = 2(x-2)(x+5)$

2. Solve each equation for x. Show all of your work and **check your answers.**

a. $\frac{3x}{x-5} + \frac{2}{x-5} = \frac{-13}{x-5}$

b. $\frac{5}{2x-2} - \frac{x}{x-1} = \frac{5}{2}$

c. $\frac{5}{x+3} + \frac{2}{(x+3)(x-3)} = \frac{4}{x-3}$

d. $\frac{3}{x-1} - \frac{2}{x-4} = \frac{-6}{x^2-5x+4}$

3. a. Show that $\frac{1}{x} - \frac{1}{x+1} = \frac{1}{x(x+1)}$

b. Show that $\frac{2}{x} - \frac{2}{x+2} = \frac{4}{x(x+2)}$

c. Make a conjecture for $\frac{10}{x} - \frac{10}{x+10} = ?$

d. Hence what is $\frac{b}{x} - \frac{b}{x+b} = ?$ For any number b .