Sec. 8.6 Solving Rational Equations

Problem 1:

a. $\frac{8^2 \cdot 1}{4} - 8x = \frac{x \cdot 8^1}{8}$ LCD: 8

$2 - 8x = x$

$+8x \quad +8x$

$\frac{2}{9} = \frac{9x}{9}$

$x = \frac{2}{9}$

b. $\frac{2 \cdot 2y}{y} + \frac{1 \cdot 2y}{2} = \frac{5 \cdot 2y}{2y}$ LCD: 2y

$4 + y = 5$

$-4 \quad -4$

$y = 1$

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

$\frac{a}{b} = \frac{c}{d}$

$4(2x+3) = 5(x+2)$

$ad = bc$ cross multiply

$8x+12 = 5x+10$

$-5x \quad -5x$

$3x+12 = 10$

$-12 \quad -12$

$\frac{3x}{3} = \frac{-2}{3}$

$x = -\frac{2}{3}$

d. $\frac{1x(x-5)}{x^2-5x} + \frac{(x-7)x(x-5)}{x} = \frac{4x(x-5)}{x^2-5x}$

LCD: $x(x-5)$

$x(x-5)$

$1 + (x-7)(x-5) = 4$ $x \neq 0, 5$

$x^2-5x-7x+35$

$1 + x^2 - 12x + 35 = 4$

$-4 \quad -4$

$x^2 - 12x + 32 = 0$

$(x-8)(x-4) = 0$

$x = 8, 4$