7.5 Solve Rational Expressions

1) $\frac{x}{2} = 10$

Undo division by using the opposite operation (multiplication)

Multiply both sides by 2 and get x = 20

2) $\frac{35}{x+3} = 5$

Multiply both sides by x +3 and get 35 = 5(x + 3)
35 = 5x + 15
20 = 5x
4 = x

3) $\frac{3}{x+2} = \frac{6}{x+9}$

Two equal fractions form a proportion (cross multiply to solve)

You get 3(x + 9) = 6(x + 2)
3x + 27 = 6x + 12
-3x -3x
27 = 3x + 12
15 = 3x
5 = x

4) $2 - \frac{6}{x} = \frac{4}{x}$

LCD = x (To get rid of fractions in an equation multiply the whole equation by the LCD)

You get:

2x -6 = 4

2x = 10

X = 5

5) $\frac{8}{x+3} = 7 - \frac{6}{x+3}$

LCD = x + 3, Multiply entire equation by x + 3

You get:

8 = 7(x + 3) - 6

8 = 7x + 21 – 6

8 = 7x + 15

-1 = x

6) $5x = \frac{-50}{3x-11}$

Multiply both sides by 3x – 11

You get:

$15x^2 – 55x = -50$

To solve get all terms on left side set equal to 0:

$15x^2 -55x + 50 = 0$

Factor: GCF is 5

$5(3x^2 – 11x +10) = 0$

$5(3x – 5)(x – 2) = 0$

(set each factor to zero and solve, not the GCF (unless it has an x in it)

X = 5/3 x = 2

7) $1 = \frac{8}{a-3} - \frac{48}{a2-9}$

(that is $a^2 - 9$) which is equal to (a – 3)(a + 3)

LCD = (a – 3)(a + 3)

Multiply entire equation by LCD (a – 3)(a + 3) and get:

(a + 3)(a – 3) = 8(a + 3) – 48

$a^2 - 9 = 8a + 24 - 48$

$a^2 - 9 = 8a - 24$

$a^2 - 8a + 15 = 0$

(a – 3)(a – 5) = 0

a = 3 (is not a valid solution as it makes the denominator of original fraction undefined (divide by 0))

a = 5 is the answer , plug back and check