

4.1.3 / 4.1.4 Solving Equations with Fractions

[p.106]

IF ONLY ONE DENOMINATOR (ONLY ONE FRACTION), CONSIDER IT A $\frac{\circ}{\circ}$,
MULTIPLY IT AWAY!

$$\text{ex) } \frac{\cancel{15}x}{\cancel{5}} = -3 \quad (\cancel{5})$$

$$x = -15$$

ex)

~~(x)~~

$$\frac{-10}{\cancel{x}} = -6(x)$$

* DO NOT WANT 'x' ON BOTTOM, SO
MULTIPLY BOTH SIDE BY 'x'

$$\frac{-10}{-6}$$

=

$$\frac{-6x}{-6}$$

* REMOVE COEFFICIENT

$$\frac{10}{6} \div 2$$

=

* REDUCE IF NECESSARY

$$\frac{5}{3}$$

=

x

ex)

$$\frac{X}{3}$$

$$-4$$

$$+2$$

* FIND VARIABLE

* REMOVE CONSTANT

~~(3)~~

$$\frac{X}{3}$$

$$-4$$

$$+2 \quad (3)$$

* REMOVE COEFFICIENT

$$X$$

$$= 6$$

$$\frac{X}{3}$$

same

$$\frac{1}{3} X$$

IF MORE THAN ONE DENOMINATOR, MULTIPLY EACH TERM BY THE LOWEST COMMON DENOMINATOR (LCD) WHICH ELIMINATES ALL DENOMINATORS.

$$\text{ex) } \left(\frac{a}{5} - a \right) \cdot 10 = \frac{10}{2}$$

* MULT. EACH TERM
BY LCD = 10

$$10 \left(\frac{a}{5} \right) - 10(a) = 10 \left(\frac{1}{2} \right)$$

$$10a - 10a = \frac{10}{2}$$

MM

$$= 5$$

* COLLECT LIKE
TERMS

* REMOVE COEFFIC.

$$-8a = 5$$

$$\frac{-8}{8}$$

$$a = -\frac{5}{8}$$

-

ex)

$$\left(\frac{4x}{5} - \frac{3}{2} \right)^6 = \left(\frac{2}{3} + \frac{1}{3}x \right)^{10}$$

* MULT BY
LCD = 30

$$\frac{4x}{5} \cdot 6 \cdot \left(\frac{30}{5} \right)^5 - \frac{3}{2} \cdot 6 \cdot \left(\frac{30}{2} \right)^5 = \frac{2}{3} \cdot 10 \cdot \left(\frac{30}{3} \right)^9 + \frac{1}{3}x \cdot 10 \cdot \left(\frac{30}{3} \right)^9$$

$$24x - 10x = 20 + 10x - 10x$$

* MOVE VARIABLES
TO ONE SIDE

$$14x = 20 + 45$$

* REMOVE CONSTANT

$$14x = 65$$
$$\frac{14x}{14} = \frac{65}{14}$$

* REMOVE COEFFIC.

$$x = \frac{65}{14}$$

$$\text{ex)} \left[\frac{1}{5} (2n+1) = \frac{2}{3} (n-1) \right] \cdot 15$$

$$3 \cdot \frac{15}{5} \left(\frac{1}{5} \right) (2n+1) = 5 \cdot \frac{15}{3} \left(\frac{2}{3} \right) (n-1)$$

$$3 (2n+1) = 10 (n-1)$$

$$\cancel{6n} + \underline{6n} = \underline{10n} - 10$$

$$\underline{3} = \underline{4n} - 10$$

$$\underline{+10} = \underline{+10}$$

$$\frac{13}{4} = \frac{4n}{4}$$

$$\frac{13}{4} = n$$

NOVICE - WORKSHEET

APPRENTICE - p. 107 # 1-12, 21, 22

EXPERT - p. 107 # 1-15 odd, 17-22