

MAT 012 Lecture Notes, Ch 2.5 & 7.5 (Part 2): Formulas

(Completed)

Ex: Given the formula $\frac{5x+h}{a} = \frac{c}{t}$ solve for x

$$\frac{5x+h}{a} = \frac{c}{t}$$

$t(5x+h) = ac$ ← alternative from this step:

$$\begin{array}{r} 5tx + th = ac \\ -th \qquad -th \\ \hline 5tx = ac - th \\ \hline x = \frac{ac - th}{5t} \end{array}$$

$$\begin{array}{r} t(5x+h) = ac \\ \hline 5x+h = \frac{ac}{t} \\ -h \qquad -h \\ \hline 5x = \frac{ac}{t} - h \\ \hline x = \frac{\frac{ac}{t} - h}{5} \end{array}$$

Ex: Given the formula $\frac{1}{v} - \frac{1}{3} = \frac{1}{x}$ solve for x

$$\frac{1}{v} - \frac{1}{3} = \frac{1}{x} \quad x \neq 0 \quad LCD = 3vx$$

$$\frac{1}{v} \cdot \frac{3vx}{1} - \frac{1}{3} \cdot \frac{3vx}{1} = \frac{1}{x} \cdot \frac{3vx}{1}$$

$$3x - vx = 3v$$

$$\frac{x(3-v)}{(3-v)} = \frac{3v}{(3-v)}$$

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

Alternative:

$$\frac{1}{v} - \frac{1}{3} = \frac{1}{x} \quad x \neq 0 \quad LCD = 3vx$$

$$\frac{1}{v} \cdot \frac{3vx}{3vx} - \frac{1}{3} \cdot \frac{vx}{vx} = \frac{1}{x} \cdot \frac{3vx}{3vx}$$

$$\frac{3x}{3vx} - \frac{vx}{3vx} = \frac{3v}{3vx}$$

$$3x - vx = 3v$$

$$\frac{x(3-v)}{(3-v)} = \frac{3v}{(3-v)}$$

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