

Systems of Equations; $1/x + 1/y$

Procedure:

1. Solve by linear combination
2. Make the numerators the same on one variable by multiplying
3. Add the equations together
4. Solve the resulting equation
5. Substitute that value into one of the equations to find the value of the other variable.

Example:

$$\frac{10}{x} - \frac{9}{y} = 8$$
$$\frac{8}{x} + \frac{15}{y} = -1$$

Multiply 1st equation by 5, the 2nd equation by 3

$$\frac{50}{x} - \frac{45}{y} = 40$$
$$\frac{24}{x} + \frac{45}{y} = -3$$

Adding the equations together $\frac{74}{x} = 37$

Cross multiplying, $37x = 74$, or $x = 2$

Substituting $x = 2$ in 1st equation, $5 - \frac{9}{y} = 8$ or $y = -3$

1. $\frac{4}{x} + \frac{9}{y} = 5$

$$\frac{8}{x} - \frac{3}{y} = 3$$

2. $\frac{12}{x} - \frac{6}{y} = -1$

$$\frac{9}{x} + \frac{10}{y} = -8$$

3.
$$\frac{4}{x} + \frac{3}{y} = 7$$
$$\frac{10}{x} - \frac{5}{y} = -\frac{15}{2}$$

4.
$$\frac{5}{x} - \frac{8}{y} = 1$$
$$\frac{3}{x} + \frac{2}{y} = -13$$

5.
$$2y - \frac{1}{x} = \frac{7}{6}$$
$$3y + \frac{4}{x} = -1$$

6.
$$\frac{1}{2m} - \frac{3}{n} = -\frac{13}{4}$$
$$\frac{1}{m} + \frac{2}{n} = \frac{25}{6}$$

**Hint – Mult 1st
equation by 4.**