

Homework solutions ACE page 60 # 6, 7, 12, 15-19

4. $(x, y) = (-2, -5)$ 5. $(x, y) = (-4, 20)$

6. $(x, y) = (10, 164)$ 7. $(x, y) = (\frac{29}{6}, -\frac{248}{3})$

8. $y = (-\frac{2}{3})x - 2$ 9. $y = (\frac{7}{9})x - \frac{4}{9}$

10. $y = -2x - 3$ 11. $y = (\frac{1}{4})x$

12. $y = x + 1$ 13. $y = -5x + 3$

14. $x = -1.5y - 3$

$$x = (\frac{9}{7})y + \frac{4}{7}$$

$$x = -0.5y - 1.5$$

$$x = 4y$$

$$x = y - 1$$

$$x = -0.2y + 0.6$$

15. $(x, y) = (3, 0)$

16. $(x, y) = (1.5, 0.5)$

17. $(x, y) = (-15, -22)$

18. $(x, y) = (1, 1)$

19. $(x, y) = (4, 2)$



Hopeful parents

16. $\begin{cases} 8x - 14y = 5 \\ x = 3y \end{cases}$

Solving by Combination

1st $x = 3y$
 $\begin{array}{r} x = 3y \\ -3y - 3y \\ \hline x - 3y = 0 \end{array}$

2nd $\begin{cases} 8x - 14y = 5 \\ x - 3y = 0 \end{cases} \Rightarrow \begin{cases} 8x - 14y = 5 \\ -8x + 24y = 0 \end{cases}$

$$\begin{array}{r} 10y = 5 \\ \hline 10 \quad 10 \\ y = \frac{5}{10} = \frac{1}{2} \end{array}$$

3rd $x = 3y$
 $x = 3\left(\frac{1}{2}\right)$
 $x = \frac{3}{2}$

$$\left(\frac{3}{2}, \frac{1}{2}\right)$$

If $A = B$
and $C = D$ (APE)
then $A + C = B + D$

$$\begin{array}{r} A = B \\ C = D \quad (\text{SPE}) \\ \hline A - C = B - D \end{array}$$

Problem 4.4 Solving Systems by Combination

A. Use the combination method to solve these linear systems.

1. $\begin{cases} -x + 4y = 3 \\ x + 2y = 5 \end{cases}$

2. $\begin{cases} 2x + 3y = 4 \\ 5x + 3y = -8 \end{cases}$

3. $\begin{cases} 2x - 3y = 4 \\ 5x - 3y = 7 \end{cases}$

1st

$$\begin{array}{r} 6y = 8 \\ 6y = 6 \\ \hline y = \frac{8}{6} - \frac{6}{6} = \frac{2}{6} = \frac{1}{3} \end{array}$$

2nd

$$\begin{array}{r} x + 2y = 5 \\ x + 2\left(\frac{1}{3}\right) = 5 \\ x + \frac{2}{3} = 5 \\ \hline x = 5 - \frac{2}{3} = \frac{15}{3} - \frac{2}{3} = \frac{13}{3} \end{array}$$

3rd

$$\begin{aligned} x &= 5 - \frac{2}{3} \\ x &= \frac{15}{3} - \frac{2}{3} = \frac{13}{3} \end{aligned}$$

$$\left(\frac{13}{3}, \frac{1}{3}\right)$$

$$\begin{array}{rcl}
 2. & \begin{cases} 2x + 3y = 4 \\ 5x + 3y = -8 \end{cases} & \text{(SPE)} \\
 - & \underline{\hspace{1cm}} & \\
 \text{1st} & \begin{array}{rcl} -3x & = & 12 \\ -3 & & -3 \end{array} & \\
 & \underline{\hspace{1cm}} & \\
 & x = -4 &
 \end{array}$$

$$\text{2nd} \quad \boxed{(-4, 4)}$$

$$\begin{array}{rcl}
 \text{2nd} & 2x + 3y = 4 & \\
 & 2(-4) + 3y = 4 & \\
 & -8 + 3y = 4 & \\
 & +8 \qquad +8 & \\
 & \underline{\hspace{1cm}} & \\
 & 3y = 12 & \\
 & \underline{\hspace{1cm}} & \\
 & y = 4 &
 \end{array}$$

(1) If $A = B$
 $\quad \quad +3 \quad +3 \quad (\text{APE})$

then $A+3 = B+3$?

(2) If $A = B$
 $\quad \quad + C \quad + C$ are

then $A+C = B+C$

③ If $A = B$
 $\& C = D$ (A.P.E)
then $A + C = B + D$

Problem 4.4 Solving Systems by Combination

A. Use the combination method to solve these linear systems.

1. $\begin{cases} -x + 4y = 3 \\ x + 2y = 5 \end{cases}$ 2. $\begin{cases} 2x + 3y = 4 \\ 5x + 3y = -8 \end{cases}$ 3. $\begin{cases} 2x - 3y = 4 \\ 5x - 3y = 7 \end{cases}$

1st + (APs)

$$\begin{array}{r} 6y = 8 \\ \hline 6 \quad 6 \\ \hline y = \frac{8}{6} = \frac{4}{3} \end{array}$$

2nd

$$\begin{array}{r} x + 2y = 5 \\ x + 2\left(\frac{4}{3}\right) = 5 \\ x + \frac{8}{3} = 5 \\ \hline x = 5 - \frac{8}{3} \end{array}$$

$$x = 5 - \frac{8}{3}$$

$$x = \frac{15}{3} - \frac{8}{3}$$

$$x = \frac{7}{3}$$

$$\text{3rd} \left(\frac{7}{3}, \frac{4}{3} \right)$$

$$\begin{array}{rcl}
 2. & \begin{cases} 2x + 3y = 4 \\ 5x + 3y = -8 \end{cases} & \text{(SPE)} \\
 \text{1st} & \underline{-3x} & = \underline{-12} \\
 & \underline{-3} & \underline{-3} \text{ (DPE)} \\
 & x & = -4
 \end{array}$$

$$\text{3rd} \quad \boxed{(-4, 4)}$$

and

$$\begin{array}{rcl}
 2x + 3y & = & 4 \\
 2(-4) + 3y & = & 4 \\
 -8 + 3y & = & 4 \\
 +8 & & +8 \\
 \hline
 3y & = & 12 \\
 \frac{3y}{3} & = & \frac{12}{3} \\
 y & = & 4
 \end{array}$$