Systems of Equations - Practice Problems

1. Solve using substitution:

   $y = x - 4$

   $2x + y = 1$

2. Solve using elimination:

   $3x + 4y = 10$

   $-3x + 2y = 2$

3. Solve using substitution:

   $x = 2y + 1$

   $x + y = 10$

4. Solve using elimination:

   $4x - y = 7$

   $2x + y = 5$

5. Challenge - use any method:

   $5x + 2y = 3$

   $3x - y = 7$

Solutions

1. Solve using substitution:

Solution: Substitute y = x - 4 into the second equation:

2x + (x - 4) = 1 -> 3x - 4 = 1 -> 3x = 5 -> x = 5/3

Then y = 5/3 - 4 = -7/3

2. Solve using elimination:

Solution: Add the equations:

(3x - 3x) + (4y + 2y) = 10 + 2 -> 6y = 12 -> y = 2

Substitute into 3x + 4y = 10: 3x + 8 = 10 -> 3x = 2 -> x = 2/3

3. Solve using substitution:

Solution: Substitute x = 2y + 1 into the second equation:

(2y + 1) + y = 10 -> 3y + 1 = 10 -> 3y = 9 -> y = 3

Then x = 2(3) + 1 = 7

4. Solve using elimination:

Solution: Add the equations:

6x = 12 -> x = 2

Substitute into 2x + y = 5: 4 + y = 5 -> y = 1

5. Challenge - use any method:

Solution: Multiply second equation by 2: 6x - 2y = 14

Add to first: (5x + 6x) = 11x = 17 -> x = 17/11

Then 3(17/11) - y = 7 -> 51/11 - y = 7 -> y = 51/11 - 77/11 = -26/11