

UNIT 4: Solving SYSTEMS of Equations using SUBSTITUTION method! [DAY 2]

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I can solve a system of equations by substitution.

Solving Systems by Substitution II Examples and NOTES

1) $y = -4x$
 $-2x + y = 24$

$-2x + (-4x) = 24$ ← **Step 1** Substitute to solve for 1st variable

$-6x = 24$ ← **Step 2** Solve for 1st variable value

$x = -4$

$y = -4(-4)$ ← **Step 3** Substitute to solve for 2nd variable

$y = 16$

Solution! ← **Step 4** Write solution as an ordered pair

$(x, y) = (-4, 16)$

Check: $-2(-4) + 16 = 24$ → $8 + 16 = 24$ ✓

2) $y = x - 7$
 $2x + y = 8$

$2x + (x - 7) = 8$ ← **Step 1**

$3x - 7 = 8$ ← **Step 2**

$3x = 15$

$x = 5$

$y = 5 - 7$ ← **Step 3**

$y = -2$

Solution! ← **Step 4**

$(5, -2)$

Check: $2(5) + (-2) = 8$ → $10 - 2 = 8$ ✓

3) $2x - 3y = 8$
 $y = -5x + 6$ ← "y-blob"

$2x + 3(5x + 6) = 8$ ← EGsier!

$2x + (-3)(5x) + (-3)(6) = 8$

$2x + (-15x) + (-18) = 8$

$-13x + (-18) = 8$

$-13x = 26$

$x = -2$

Solution $(-2, -4)$

Check: $2(-2) - 3(-4) = 8$ → $-4 + 12 = 8$ ✓

4) $y = -8x + 40$ ← "y-blob"

$3x + y = 10$

$3x + (-8x + 40) = 10$ ← EGsier

$-5x + 40 = 10$

$-5x = -30$

$x = 6$

Solution $(6, -8)$

Check: $3(6) + (-8) = 10$ → $18 - 8 = 10$ ✓

Steps in Solving Systems by Substitution...

- 1) Substitute to make one equation with one variable.
- 2) Solve the equation by UNDOING the order of operations. (Isolate the variable.)
- 3) Substitute your solution back in for your known variable to calculate the second value.
- 4) Write your solution as a coordinate point.
- 5) Check your solution by substituting your solution back into both equations.