

Mathematics 10
Homework Assignment 2

1. Solve using **substitution**.

$$y = -x + 8$$
$$x - y = 4$$

Step 1: Isolate a variable with 1 or -1 in front of it

$$y = -x + 8$$

Step 2: Substitute this for the variable in the OTHER equation

$$x - (-x + 8) = 4$$

Step 3: Simplify and solve

$$x + x - 8 = 4$$
$$2x = 4 + 8$$
$$2x = 12$$
$$x = \frac{12}{2}$$
$$x = 6$$

Step 4: Plug this variable answer into either equation to solve for the remaining variable

$$x = 6$$

$$y = -(6) + 8$$
$$y = 2$$

Step 5: Plug solution $x = 6$ and $y = 2$ (6, 2) into BOTH ORIGINAL EQUATIONS to check.
Left side should equal Right side (LS = RS)

$$y = -x + 8$$
$$2 = -(6) + 8$$
$$2 = -6 + 8$$
$$2 = 2$$

$$x - y = 4$$
$$6 - (2) = 4$$
$$6 - 2 = 4$$
$$4 = 4$$

2. Solve using **substitution**.

$$x + y = 5$$

$$3x - y = 7$$

Step 1: Isolate a variable with 1 or -1 in front of it

$$x = 5 - y$$

Step 2: Substitute this for the variable in the OTHER equation

$$3(5 - y) - y = 7$$

Step 3: Simplify and solve

$$15 - 3y - y = 7$$

$$-4y = 7 - 15$$

$$-4y = -8$$

$$y = \frac{-8}{-4}$$

$$y = 2$$

Step 4: Plug this variable answer into either equation to solve for the remaining variable

$$y = 2$$

$$3x - (2) = 7$$

$$3x = 7 + 2$$

$$3x = 9$$

$$x = \frac{9}{3}$$

$$x = 3$$

Step 5: Plug solution $x = 3$ and $y = 2$ (3, 2) into BOTH ORIGINAL EQUATIONS to check.
Left side should equal Right side (LS = RS)

$$3 + 2 = 5$$

$$5 = 5$$

$$3(3) - 2 = 7$$

$$9 - 2 = 7$$

$$7 = 7$$