# Solving Systems of Linear Equations by the Substitution Method

$$\boxed{\text{Total points} = 61}$$

1. $2x - y = 2$ ✓
$-1[-y = -2x + 2]$ ✓
$\boxed{y = 2x - 2}$ ✓

$6x + 5y = 2$ ✓
$6x + 5(2x - 2) = 2$ ✓
$6x + 10x - 10 = 2$ ✓
$16x = 2 + 10$ ✓
$\dfrac{16x}{16} = \dfrac{12}{16}$ ✓
$\boxed{x = \dfrac{3}{4}}$ ✓

$2x - y = 2$ ✓
$2\left(\dfrac{3}{4}\right) - y = 2$ ✓
$\dfrac{3}{2} - y = 2$ ✓
$-y = -\dfrac{3}{2} + 2$ ✓
$-1\left[-y = \dfrac{1}{2}\right]$ ✓
$\boxed{y = -\dfrac{1}{2}}$ ✓

$\therefore$ Solution $= \boxed{\left(\dfrac{3}{4}, -\dfrac{1}{2}\right)}$ ✓

2. $x - 3y = 1$ ✓
$\boxed{x = 3y + 1}$ ✓

$-2x + 6y = 5$ ✓
$-2(3y + 1) + 6y = 5$ ✓
$-6y - 2 + 6y = 5$ ✓
$0 = 5 + 2$ ✓
$\boxed{0 = 7}$ ✓

$\therefore$ Solution $= \boxed{\text{None}}$ ✓

3. $x - 3y = 1$ ✓
$\boxed{x = 3y + 1}$ ✓

$-2x + 6y = -2$ ✓
$-2(3y + 1) + 6y = -2$ ✓
$-6y - 2 + 6y = -2$ ✓
$0 = -2 + 2$ ✓
$\boxed{0 = 0}$ ✓

$\therefore$ Solution $= \boxed{\text{None}}$ ✓

4. $x + y = 11$ ✓
$\boxed{x = -y + 11}$ ✓

$3x - y = 5$ ✓
$3(-y + 11) - y = 5$ ✓
$-3y + 33 - y = 5$ ✓
$-4y = 5 - 33$ ✓
$\dfrac{-4y}{-4} = \dfrac{-28}{-4}$ ✓
$\boxed{y = 7}$ ✓

$x + y = 11$ ✓
$x + 7 = 11$ ✓
$x = 11 - 7$ ✓
$\boxed{x = 4}$ ✓

$\therefore$ Solution $= \boxed{(4,7)}$ ✓

5. $3x + 2y = 9$ ✓
$\dfrac{2y}{2} = -\dfrac{3x}{2} + \dfrac{9}{2}$ ✓
$\boxed{y = -\dfrac{3x}{2} + \dfrac{9}{2}}$ ✓

$3x = 4y - 3$ ✓
$3x = 4\left(-\dfrac{3x}{2} + \dfrac{9}{2}\right) - 3$ ✓
$3x = -6x + 18 - 3$ ✓
$3x + 6x = 15$ ✓
$\dfrac{9x}{9} = \dfrac{15}{9}$ ✓
$\boxed{x = \dfrac{5}{3}}$ ✓

$3x = 4y - 3$ ✓
$3\left(\dfrac{5}{3}\right) = 4y - 3$ ✓
$5 = 4y - 3$ ✓
$5 + 3 = 4y$ ✓
$\dfrac{8}{4} = \dfrac{4y}{4}$ ✓
$\boxed{y = 2}$ ✓

$\therefore$ Solution $= \boxed{\left(\dfrac{5}{3}, 2\right)}$ ✓