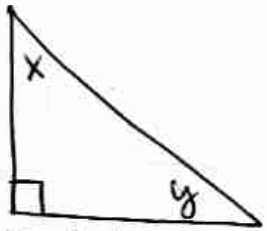
p. 94 #21 a)



x is twice as big as y.

① $x + y = 90$

② $x = 2y$

Sub ② into ①

$(x) + y = 90$

$(2y) + (y) = 90$

$\frac{3y}{3} = \frac{90}{3}$

$y = 30$

Solve for x using $y = 30$

$x + y = 90$

$x + 30 = 90$

$x = 90 - 30$

$x = 60$

Check (60, 30):

①

$60 + 30 = 90$

$90 = 90$

true

②

$60 = 2(30)$

$60 = 60$

true

∴ $x = 60$ and $y = 30$

p. 103 #18

Let "b" represent the # of bass in the lake.
Let "p" represent the # of perch in the lake.

① $b + p = 10000$ $\quad (b, p) = (x, y)$
② $3b + 2p = 22000$

Solving using Elimination.

$3 \times$ ① $3b + 3p = 30000$
② $3b + 2p = 22000$

① − ② $0 + 1p = 8000$
$p = 8000$

Sub $p = 8000$ into ① to solve for b.

$b + 8000 = 10000$
$b = 10000 - 8000$
$b = 2000$

Check $(b, p) = (2000, 8000)$

①
$b + p = 10000$
$2000 + 8000 = 10000$
LS = RS
true

②
$3b + 2p = 22000$
$3(2000) + 2(8000) = 22000$
$6000 + 16000 = 22000$
LS = RS
true.

∴ there are 2000 bass & 8000 perch in the lake.

p.137 #2c

Solve by substitution

① $4x - 3y = 10$

② $2x + 3y = 4$

rearrange ② $2x + 3y = 4$

$\frac{3y}{3} = -\frac{2x}{3} + \frac{4}{3}$

new ② $y = -\frac{2}{3}x + \frac{4}{3}$

Sub ② into ①

$4x - 3(y) = 10$

$4x - 3\left(-\frac{2}{3}x + \frac{4}{3}\right) = 10$

$4x + \frac{6x}{3} - \frac{12}{3} = 10$

$4x + 2x - 4 = 10$

$6x = 10 + 4$

$\frac{6x}{6} = \frac{14}{6}$

$x = \frac{14}{6} = \frac{7}{3}$

$x = 7/3$

Solve for y by using $x = \frac{7}{3}$

① $\frac{4}{1}\left(\frac{7}{3}\right) - 3y = 10$

$\frac{28}{3} - 3y = 10$

$3\left(-3y = 10 - \frac{28}{3}\right)$

$-9y = 30 - 3\left(\frac{28}{3}\right)$

$-9y = 30 - 28$

$-9y = 2$

$y = \frac{2}{-9}$

$y = \frac{-2}{9}$

Check $\left(\frac{7}{3}, \frac{-2}{9}\right)$:

① LS $= 4\left(\frac{7}{3}\right) - 3\left(\frac{-2}{9}\right)$ RS $= 10$

$= \frac{28}{3} + \frac{6}{9}$

$= \frac{28}{3} + \frac{2}{3}$

$= \frac{30}{3} = 10$

LS = RS true.

② LS $= 2\left(\frac{7}{3}\right) + 3\left(\frac{-2}{9}\right)$ RS $= 4$

$= \frac{14}{3} - \frac{6}{9}$

$= \frac{14}{3} - \frac{2}{3}$

$= \frac{12}{3} = 4$ LS = RS true

$\therefore \left(\frac{7}{3}, \frac{-2}{9}\right)$ is the solution to this system.