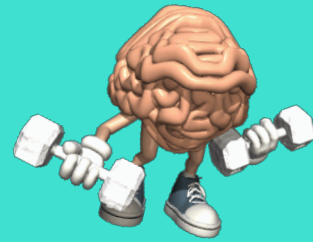




Warm Up



1) Solve the following systems using Substitution :

a) $3x - 4y = 19$
 $x + 4y = 1 - 4y$
 \downarrow

① $x = 1 - 4y$
 Sub into ②

$$3x - 4y = 19$$

$$3(1 - 4y) - 4y = 19$$

$$3 - 12y - 4y = 19$$

$$3 - 16y = 19 - 3$$

$$\frac{-16y}{-16} = \frac{16}{-16}$$

$$y = -1$$

↓ sub into 1

$$x = 1 - 4y$$

$$= 1 - 4(-1)$$

$$x = 1 + 4$$

$$x = 5$$

$$(5, -1)$$

b) $3x + y = 3$
 $x = y - 1$

$$3x + y = 3$$

$$3(y - 1) + y = 3$$

$$3y - 3 + y = 3$$

$$4y - 3 = 3 + 3$$

$$4y = 6$$

$$\frac{4y}{4} = \frac{6}{4}$$

$$y = \frac{3}{2}$$

$$x = y - 1$$

$$= \frac{3}{2} - 1$$

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

$$\frac{1}{2} = \frac{2}{2}$$

need C.D

$$x = \frac{1}{2}$$

$$\left(\frac{1}{2}, \frac{3}{2}\right)$$

$$\text{or } (0.5, 1.5)$$

this is the warm up

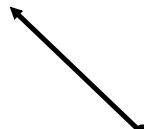
a) $3x - 4y = 19$
 $x + 4y = 1$

this is the warm up

$$\text{b) } 3x + y = 3$$

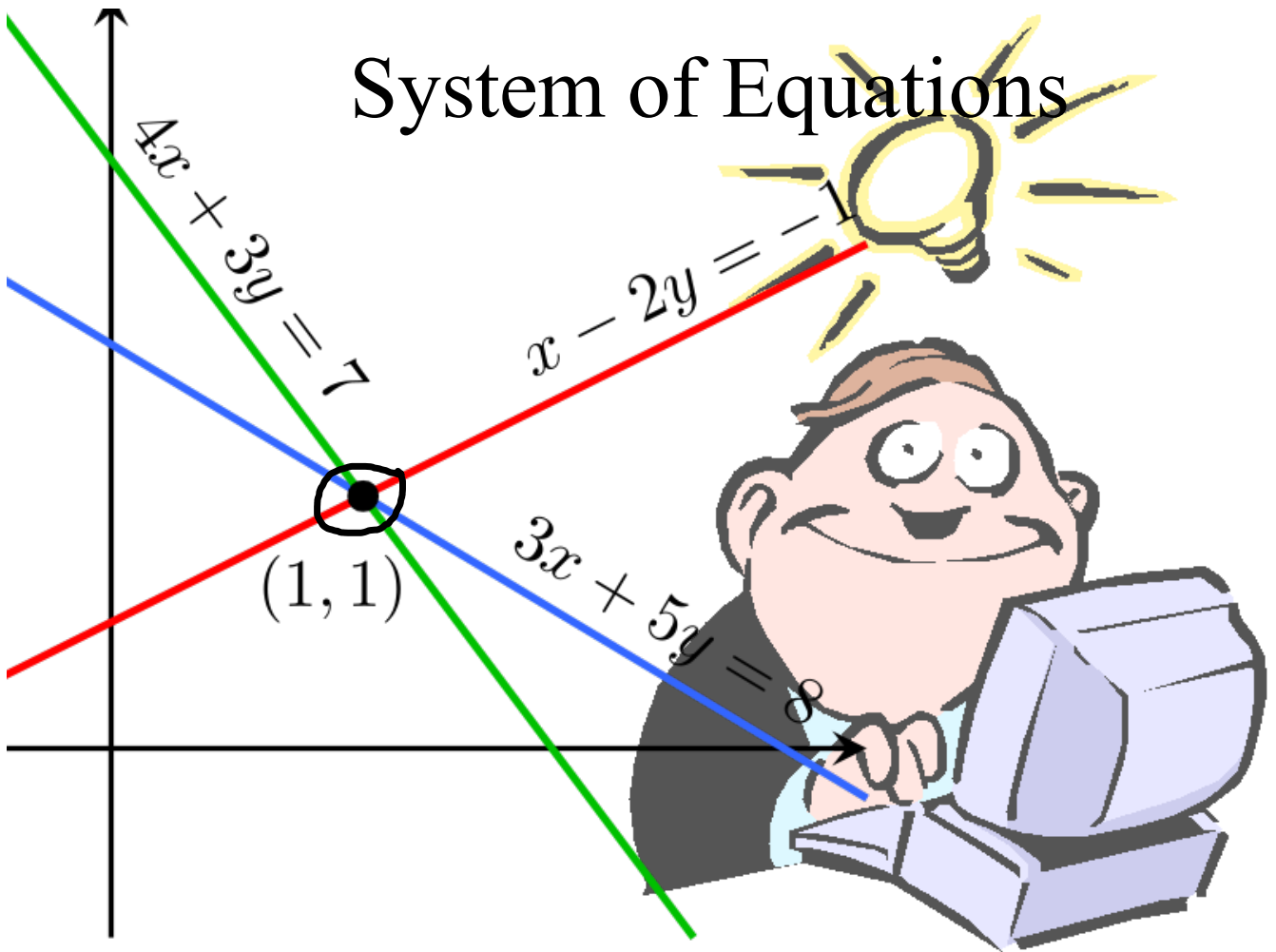
$$x = y - 1$$

HW Solutions to WS



Click on link above

System of Equations



You try

Elimination using Addition

Consider the system

$$\textcircled{1} \quad 1x - 2y = 5 \quad \leftarrow$$

$$\textcircled{2} \quad 2x + 2y = 7 \quad \leftarrow$$

$$\textcircled{1} + \textcircled{2} \quad 3x = 12$$

$$\frac{3x}{3} = \frac{12}{3}$$

$$\boxed{x = 4}$$

↓ sub it into 1

$$\textcircled{1} \quad x - 2y = 5$$

$$4 - 2y = 5$$

$$4 - 2y = 5 - 4$$

$$-2y = 1$$

$$\frac{-2y}{-2} = \frac{1}{-2}$$

$$\boxed{y = -\frac{1}{2}}$$

$$\left(4, -\frac{1}{2}\right)$$

Elimination using Addition

Consider the system

$$\begin{array}{r} x - 2y = 5 \\ + 2x + 2y = 7 \\ \hline \end{array}$$

touch
← Lets add both equations
← to each other

Solution

Elimination using Addition

Consider the system

$$\begin{array}{r} x - 2y = 5 \\ + 2x + 2y = 7 \\ \hline 3x \quad = 12 \end{array}$$

← Lets add both equations to each other

solve for x

ANS: (4, y)

$$x = 4$$

Now solve for y (HOW???)

- sub the value of x into one of the equations and solve for y

$$x - 2y = 5$$

$$4 - 2y = 5$$

$$- 2y = 1$$

$$y = \frac{-1}{2}$$

intersection point (4, - 0.5)

Elimination using Addition

Same process as before
You can choose to eliminate either x or y

$$\textcircled{1} \quad x + 3y = 14$$

$$\textcircled{2} \quad -x + 4y = 7$$

$$\textcircled{1} + \textcircled{2} \quad 7y = 21$$

$$\frac{7y}{7} = \frac{21}{7}$$

$$y = 3$$

↓ sub $\textcircled{1}$

$$x + 3y = 14$$

$$x + 3(3) = 14$$

$$x + 9 = 14 - 9$$

$$x = 5$$

$$(5, 3)$$

Who would you eliminate??

Do you add or subtract??

Solution

Elimination using Addition

$$\begin{array}{r} x + 3y = 14 \\ -x + 4y = 7 \\ \hline 7y = 21 \end{array}$$

Add this time

$$y = 3$$

(x, 3)

solve for x

$$x + 3y = 14$$

$$x + 3(3) = 14$$

$$x + 9 = 14$$

$$x = 14 - 9$$

$$x = 5$$

You Try

Solve the system of equations

Example 1)

$$\begin{array}{r} \downarrow \\ 2x + y = 5 \\ + 3x - y = 15 \\ \hline \end{array}$$

$$\frac{5x}{5} = \frac{20}{5}$$

$$\boxed{x=4}$$

↓ sub into ①

$$\begin{array}{l} 2x + y = 5 \\ 2(4) + y = 5 \\ 8 + y = 5 - 8 \end{array}$$

$$\boxed{y=-3}$$

$$(4, -3)$$

Example 2)

$$\begin{array}{r} \downarrow \\ \textcircled{1} \quad 6y + x = 11 \\ \textcircled{2} \quad 2y - x = 5 \\ \hline \textcircled{1} + \textcircled{2} \quad 8y = 16 \\ \frac{8y}{8} = \frac{16}{8} \end{array}$$

$$\boxed{y=2}$$

↓ sub into ①

$$\begin{array}{l} 6y + x = 11 \\ 6(2) + x = 11 \\ 12 + x = 11 - 12 \end{array}$$

$$\boxed{x=-1}$$

$$(-1, 2)$$

Elimination Using Subtraction

$$\begin{array}{r} 6x + 11y = -5 \\ - (6x + 9y = -3) \\ \hline \end{array}$$

2y

Careful you are subtraction all of the second
(switch all signs on the second equation)

$$\begin{array}{r} 6x + 11y = -5 \\ -6x - 9y = +3 \\ \hline \end{array}$$

$$2y = -2$$

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

$$\boxed{y = -1}$$

May want to
change signs and
add

Sub into ①

$$6x + 11y = -5$$

$$6x + 11(-1) = -5$$

$$6x - 11 = -5$$

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

$$\boxed{x = 1}$$

$$(1, -1)$$

Same

Elimination Using Subtraction

Careful you are subtraction all of the second
(switch all signs on t second equation)

$$\begin{array}{r} 6x + 11y = -5 \\ -(6x + 9y = -3) \end{array}$$



Solution **Elimination Using Subtraction**

Careful you are subtraction all of the second
(switch all signs on t second equation)

$$\begin{array}{r} 6x + 11y = -5 \\ -6x - 9y = +3 \\ \hline 2y = -2 \end{array}$$

$$y = -1$$

solve for x

$$\begin{array}{l} 6x + 11y = -5 \\ 6x + 11(-1) = -5 \\ 6x - 11 = -5 \\ 6x = -5 + 11 \\ 6x = 6 \\ x = 1 \end{array}$$

Intersection (1, -1)

You Try

Use subtraction to eliminate

$$\begin{array}{r} \text{a) } 7x + 7y = 0 \\ - (7x - y = 24) \\ \hline \end{array} \Rightarrow \begin{array}{r} 7x + 7y = 0 \\ -7x + y = -24 \\ \hline \end{array}$$

① - ②

$$\begin{array}{r} \text{b) } 7x + 6y = -10 \\ 9x + 6y = -30 \end{array}$$

$$\frac{8y}{8} = \frac{-24}{8}$$

$$\boxed{y = -3}$$

↓ sub ①

$$\begin{array}{r} 7x + 7y = 0 \\ 7x + 7(-3) = 0 \\ 7x + 21 = 0 - 21 \end{array}$$

$$\frac{7x}{7} = \frac{-21}{7}$$

$$\boxed{x = 3}$$

$$(3, -3)$$

Math 10 (Numbers Relations & Functions)

Name _____

Elimination

Date _____

Solve each system by elimination.

$$\text{1) } \begin{array}{l} 2x + 8y = 8 \\ -3x - 8y = -4 \end{array} \quad \text{Add}$$

$$\text{2) } \begin{array}{l} -x + 4y = 7 \\ x + 4y = 25 \end{array} \quad \text{Add}$$

$$\text{3) } \begin{array}{l} -9x + 8y = 15 \\ -9x + 6y = 27 \end{array} \quad \text{Subtr}$$

$$\text{4) } \begin{array}{l} -x - 5y = -3 \\ -x + 3y = 13 \end{array} \quad \text{Subtr}$$

$$\text{5) } \begin{array}{l} -5x + 2y = 9 \\ 6x - 2y = -8 \end{array} \quad \text{Add}$$

$$\text{6) } \begin{array}{l} 5x + 5y = 30 \\ 5x + 2y = 12 \end{array} \quad \text{Subtr}$$

$$\text{7) } \begin{array}{l} -10x + 8y = -28 \\ 9x + 4y = 14 \end{array}$$

$$\text{8) } \begin{array}{l} -6x + y = -15 \\ -12x - 3y = -15 \end{array}$$

$$\text{9) } \begin{array}{l} -5x + 10y = -10 \\ -7x - 5y = -14 \end{array}$$

$$\text{10) } \begin{array}{l} -5x + 10y = 5 \\ 10x - 4y = 6 \end{array}$$

$$\text{11) } \begin{array}{l} 7x - 2y = 24 \\ 3x + 9y = 30 \end{array}$$

$$\text{12) } \begin{array}{l} -3x - 2y = 2 \\ -5x - 3y = 6 \end{array}$$

$$\text{13) } \begin{array}{l} 3x - 6y = 30 \\ -10x - 9y = -13 \end{array}$$

$$\text{14) } \begin{array}{l} 7x - 10y = 0 \\ -9x - 4y = 0 \end{array}$$

$$\text{15) } \begin{array}{l} -10x + 7y = 12 \\ -3x + 6y = -12 \end{array}$$

$$\text{16) } \begin{array}{l} -3x + 4y = 2 \\ -5x + 3y = 29 \end{array}$$

$$\text{17) } \begin{array}{l} -10x - 6y = -14 \\ 8x + 5y = 11 \end{array}$$

$$\text{18) } \begin{array}{l} -3x - 2y = 8 \\ -8x - 7y = 18 \end{array}$$

$$\begin{aligned} 1) \quad & 2x + 8y = 8 \\ & -3x - 8y = -4 \\ & \quad (-4, 2) \end{aligned}$$

$$\begin{aligned} 2) \quad & -x + 4y = 7 \\ & x + 4y = 25 \\ & \quad (9, 4) \end{aligned}$$

$$\begin{array}{l} 3) \quad -9x + 8y = 15 \\ \quad \quad -9x + 6y = 27 \\ \quad \quad \quad (-7, -6) \end{array}$$

$$\begin{array}{l} 4) \quad -x - 5y = -3 \\ \quad \quad -x + 3y = 13 \\ \quad \quad \quad (-7, 2) \end{array}$$

$$\begin{array}{l} 5) \quad -5x + 2y = 9 \\ \quad \quad 6x - 2y = -8 \\ \quad \quad (1, 7) \end{array}$$

$$\begin{array}{l} 6) \quad 5x + 5y = 30 \\ \quad \quad 5x + 2y = 12 \\ \quad \quad (0, 6) \end{array}$$

$$\begin{aligned} 7) \quad & -10x + 8y = -28 \\ & 9x + 4y = 14 \\ & (2, -1) \end{aligned}$$

$$\begin{aligned} 8) \quad & -6x + y = -15 \\ & -12x - 3y = -15 \\ & (2, -3) \end{aligned}$$

$$\begin{aligned} 9) \quad & -5x + 10y = -10 \\ & -7x - 5y = -14 \\ & (2, 0) \end{aligned}$$

$$\begin{aligned} 10) \quad & -5x + 10y = 5 \\ & 10x - 4y = 6 \\ & (1, 1) \end{aligned}$$

$$\begin{array}{l} 11) \quad 7x - 2y = 24 \\ \quad \quad 3x + 9y = 30 \\ \quad \quad (4, 2) \end{array}$$

$$\begin{array}{l} 12) \quad -3x - 2y = 2 \\ \quad \quad -5x - 3y = 6 \\ \quad \quad (-6, 8) \end{array}$$

$$\begin{array}{l} 13) \quad 3x - 6y = 30 \\ \quad -10x - 9y = -13 \\ \quad (4, -3) \end{array}$$

$$\begin{array}{l} 14) \quad 7x - 10y = 0 \\ \quad -9x - 4y = 0 \\ \quad (0, 0) \end{array}$$

$$\begin{array}{l} 15) \quad -10x + 7y = 12 \\ \quad \quad -3x + 6y = -12 \\ \quad \quad \quad (-4, -4) \end{array}$$

$$\begin{array}{l} 16) \quad -3x + 4y = 2 \\ \quad \quad -5x + 3y = 29 \\ \quad \quad \quad (-10, -7) \end{array}$$

$$\begin{array}{l} 17) \quad -10x - 6y = -14 \\ \quad \quad 8x + 5y = 11 \\ \quad \quad (2, -1) \end{array}$$

$$\begin{array}{l} 18) \quad -3x - 2y = 8 \\ \quad \quad -8x - 7y = 18 \\ \quad \quad (-4, 2) \end{array}$$

Homework:

Math 10B

Name _____

System of Equations: Elimination (Add & Sub)

Date _____

Solve each system by elimination.

1) $8x - 8y = 0$
 $-5x + 8y = -3$

2) $6x - 4y = 6$
 $-8x + 4y = 0$

3) $-3x + 8y = -15$
 $9x - 8y = -3$

4) $x + 3y = 18$
 $3x - 3y = -6$

5) $-x + 5y = -28$
 $x + 3y = -28$

6) $-5x + 3y = 10$
 $5x - 5y = 10$

7) $-4x + 5y = 25$
 $-4x + 6y = 22$

8) $-3x + 5y = 12$
 $-5x + 5y = 0$

11) $5x - y = 19$
 $-9x - y = -9$

12) $-2x + y = 0$
 $-6x + y = 20$

13) $10x = 18 + 8y$
 $-8y = -5x - 27$

14) $8y + 13 = 3x$
 $-8y = 9x + 25$

15) $4 + x = -2y$
 $16 + 8y - x = 0$

16) $-12 + 8x = 6y$
 $-5y - 10 = 4x$

Homework:

Math 10B

Name _____

System of Equations: Elimination (Add & Sub)

Date _____

Solve each system by elimination.

$$\begin{aligned} 1) \quad & 8x - 8y = 0 \\ & -5x + 8y = -3 \end{aligned}$$

$$\begin{aligned} 2) \quad & 6x - 4y = 6 \\ & -8x + 4y = 0 \end{aligned}$$

$$(-3, -6) \text{ add}$$

$$\begin{aligned} 3) \quad & -3x + 8y = -15 \\ & 9x - 8y = -3 \end{aligned}$$

$$\begin{aligned} 4) \quad & x + 3y = 18 \\ & 3x - 3y = -6 \end{aligned}$$

$$(3, 5) \text{ add}$$

$$\begin{aligned} 5) \quad & -x + 5y = -28 \\ & x + 3y = -28 \end{aligned}$$

$$\begin{aligned} 6) \quad & -5x + 3y = 10 \\ & 5x - 5y = 10 \end{aligned}$$

$$(-8, -10) \text{ add}$$

$$\begin{aligned} 7) \quad & -4x + 5y = 25 \\ & -4x + 6y = 22 \end{aligned}$$

$$\begin{aligned} 8) \quad & -3x + 5y = 12 \\ & -5x + 5y = 0 \end{aligned}$$

$$(6, 6) \text{ sub}$$

$$\begin{aligned} 9) \quad & -4x - 7y = -15 \\ & -4x - 9y = -17 \end{aligned}$$

$$\begin{aligned} 10) \quad & -5x - 3y = 7 \\ & -2x - 3y = -8 \end{aligned}$$

$$(-5, 6) \text{ sub}$$

$$\begin{aligned} 11) \quad & 5x - y = 19 \\ & -9x - y = -9 \end{aligned}$$

$$\begin{aligned} 12) \quad & -2x + y = 0 \\ & -6x + y = 20 \end{aligned}$$

$$(-5, -10) \text{ sub}$$

$$\begin{aligned} 13) \quad & 10x = 18 + 8y \\ & -8y = -5x - 27 \end{aligned}$$

$$\begin{aligned} 14) \quad & 8y + 13 = 3x \\ & -8y = 9x + 25 \end{aligned}$$

$$(-1, -2) \text{ sub}$$

~~$$\begin{aligned} 15) \quad & 4 + y = -2y \\ & 16 + 8y - x = 0 \end{aligned}$$~~

~~$$\begin{aligned} 16) \quad & -12 + 8x = 6y \\ & -5y - 10 = 4x \end{aligned}$$~~

$$(0, -2)$$

$$\begin{array}{r} 2) \ 6x - 4y = 6 \quad \textcircled{1} \\ + \ -8x + 4y = 0 \quad \textcircled{2} \\ \hline \end{array}$$

$$-2x + 0 = 6$$

$$-2x = 6$$

$$x = \frac{6}{-2}$$

$$\boxed{x = -3}$$

$$6x - 4y = 6$$

$$6(-3) - 4y = 6$$

$$-18 - 4y = 6$$

$$-4y = 6 + 18$$

$$-4y = 24$$

$$y = \frac{24}{-4}$$

$$\boxed{y = -6}$$

$$\begin{array}{r} 2) \ 6x - 4y = 6 \quad \textcircled{1} \\ + \ -8x + 4y = 0 \quad \textcircled{2} \\ \hline \end{array}$$

$$-2x + 0 = 6$$

$$-2x = 6$$

$$x = \frac{6}{-2}$$

$$\boxed{x = -3}$$

$$6x - 4y = 6$$

$$6(-3) - 4y = 6$$

$$-18 - 4y = 6$$

$$-4y = 6 + 18$$

$$-4y = 24$$

$$y = \frac{24}{-4}$$

$$\boxed{y = -6}$$

$$8) -3x + 5y = 12 \quad \textcircled{1}$$

$$-(-5x + 5y = 0) \quad \textcircled{2}$$

$$(-3x + 5x) + 0 = 12 - 0$$

$$2x = 12$$

$$x = \frac{12}{2}$$

$$\boxed{x = 6}$$

$$-3x + 5y = 12$$

$$-3(6) + 5y = 12$$

$$-18 + 5y = 12$$

$$5y = 12 + 18$$

$$5y = 30$$

$$\boxed{y = 6}$$

$$\begin{array}{r} 8) \quad -3x + 5y = 12 \\ - \quad (-5x + 5y = 0) \\ \hline \end{array}$$

$$\begin{array}{r} 8) \quad -3x + 5y = 12 \\ + \quad 5x - 5y = 0 \\ \hline 2x = 12 \end{array}$$

$$\boxed{x = 6}$$

$$10) \begin{array}{r} -5x - 3y = 7 \\ -(-2x - 3y = -8) \end{array}$$

$$(-5x + 2x) - 3y + 3y = 7 + 8$$

$$-3x = 15$$

$$x = \frac{15}{-3}$$

$$\boxed{x = -5}$$

$$-5x - 3y = 7$$

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

$$25 - 3y = 7$$

$$-3y = 7 - 25$$

$$-3y = -18$$

$$y = \frac{-18}{-3}$$

$$\boxed{y = +6}$$

Elimination using Multiplication

Consider the system

$$\begin{array}{l} x + 2y = 6 \\ 3x + 3y = -6 \end{array}$$

How are they related?

What could we do to equation 1 to make the "x" equal?

answer



Elimination using Multiplication

Consider the system

$$\begin{array}{l} x + 2y = 6 \\ 3x + 3y = -6 \end{array}$$

How are they related?

What could we do to equation 1 to make the "x" equal?

multiply equation 1 by 3



Elimination using Multiplication

Consider the system

$$\begin{array}{r} 3x + 6y = 18 \\ 3x + 3y = -6 \end{array}$$

Now subtract the equations



Elimination using Multiplication

Consider the system

$$3x + 6y = 18$$

$$\underline{-3x - 3y = +6}$$

Now subtract the equations

Answer



Elimination using Multiplication

Consider the system

$$3x + 6y = 18$$

$$-3x - 3y = +6$$

$$3y = 24$$

$$y = 8$$

Now subtract the equations

Sub into equation 1 (original) or the above

$$x + 2y = 6$$

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

$$x + 16 = 6$$

$$x = 6 - 16$$

$$x = -10$$

$$(-10, 6)$$

You Try

1)

$$x + 2y = 5$$

$$2x + 6y = 12$$

ANS:

2)

$$x + 2y = 4$$

$$x - 4y = 16$$

ANS:

Attachments

solutions to Day 3 WS PDF Version.pdf