Maths



1. Solve by substitution

$$xy = -16$$
$$y = x - 8$$

2. Solve by substitution

$$xy = 15$$
$$y = 2x + 7$$



3. Tom and Jim are solving these equations

$$xy = 3$$



$$y - 8x = 10$$



They both decide to rearrange the equation B in order to solve by substitution.

$$y = 8x + 10$$

$$x = \frac{y - 10}{8}$$

Which method do you think will be easier to use?

Solve the equations.



4. Solve this pair of equations, giving your answers to 2 decimal places.

$$xy = 7$$
$$y = 4x + 1$$

HINT: If
$$ax^2 + bx + c = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$



Answers



1. Solve by substitution

$$xy = -16$$
$$y = x - 8$$

$$x(x - 8) = -16$$

$$x^2 - 8x + 16 = 0$$

$$(x-4)(x-4)$$

$$x = 4$$
 and $y = -4$

(note – only one pair of solutions!)

2. Solve by substitution

$$xy = 15$$
$$y = 2x + 7$$

$$2x^2 + 7x - 15 = 0$$

$$(2x - 3)(x + 5)$$

$$x = \frac{3}{2}$$
 and y = 10

$$x = -5$$
 and $y = -3$

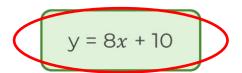


3. Tom and Jim are solving these equations

$$xy = 3$$

$$y - 8x = 10$$
B

They both decide to rearrange the equation B in order to solve by substitution.



$$x = \frac{y - 10}{8}$$

Which method do you think will be easier to use?

Solve the equations.

$$x = -\frac{3}{2}$$
 and $y = -2$

$$x = \frac{1}{4}$$
 and y = 12



4. Solve this pair of equations, giving your answers to 2 decimal places.

$$xy = 7$$
 $x = 1.29$ and $y = 5.43$
 $y = 4x + 1$ $x = -1.54$ and $y = -4.55$

HINT: If
$$ax^2 + bx + c = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

