

# Understanding solutions to equations with respect to their graphs

Maths

Mrs Dennett

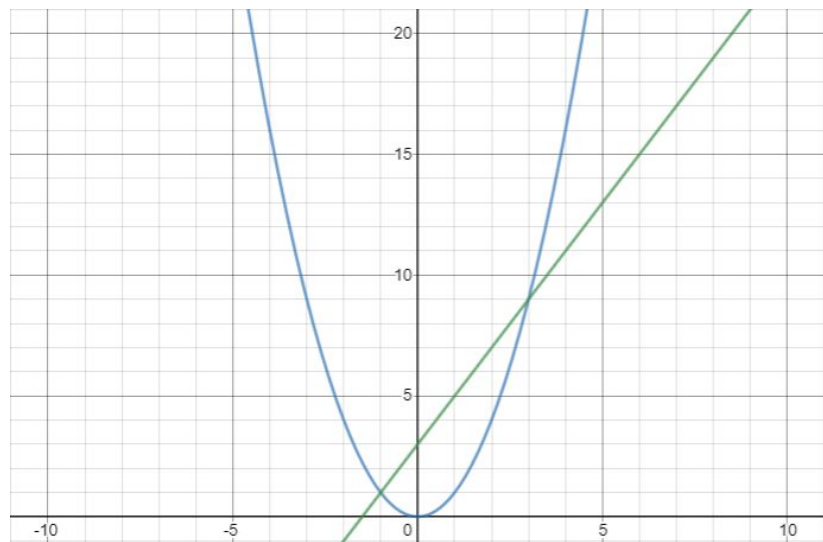


# Understanding solutions to equations with respect to their graphs

1. Use the graph to solve

$$y = x^2$$

$$y = 2x + 3$$



2. Is  $x = 6$  and  $y = 0$  a solution to both equations?

$$x^2 + y^2 = 36$$

$$x - 2y = 6$$

What does this tell you about the point (6,0)?



# Understanding solutions to equations with respect to their graphs

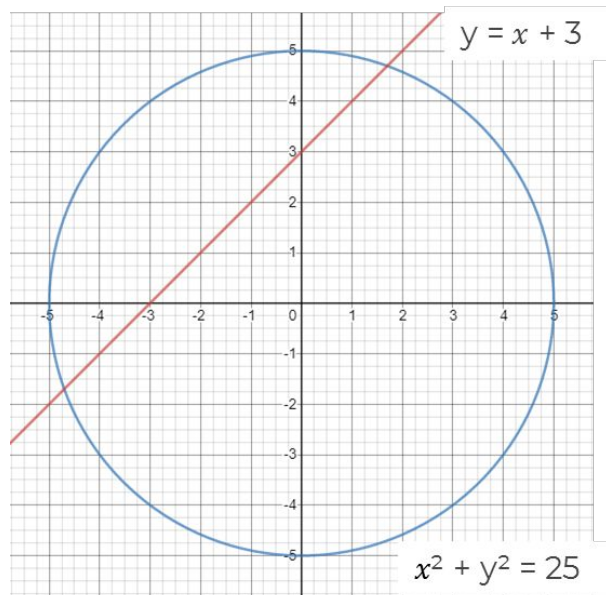
3. Is  $(-3, 2)$  a point of intersection of these equations?

$$x^2 + y^2 = 13$$

$$y = x + 1$$

Find the value of  $x$  if  $(x, 3)$  is a point of intersection?

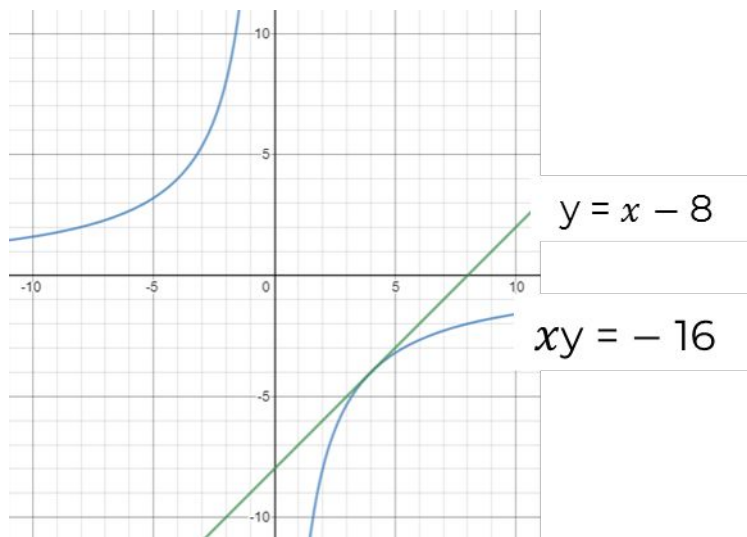
4. Estimate the solutions of these equations to 1 decimal place.



# Understanding solutions to equations with respect to their graphs

5. Explain why these two equations only have one set of solutions.

Can you think of two equations where there would be no solutions?



# Answers

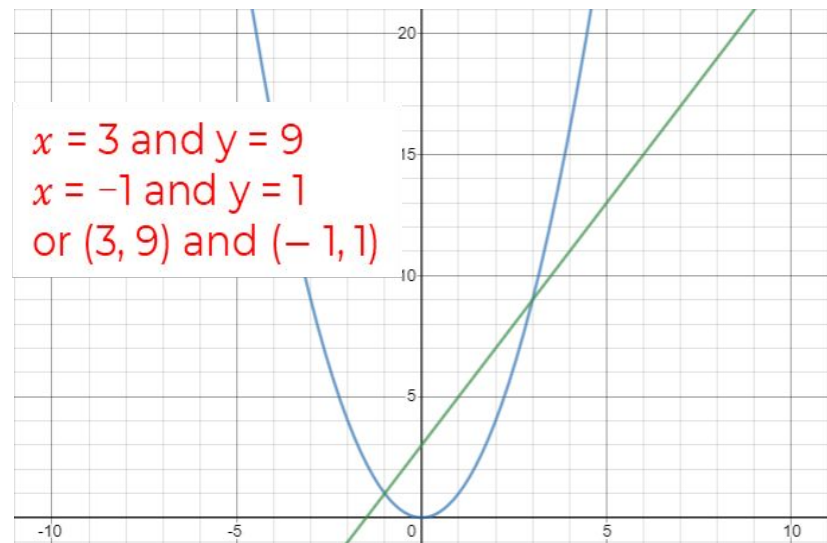


# Understanding solutions to equations with respect to their graphs

1. Use the graph to solve

$$y = x^2$$

$$y = 2x + 3$$



2. Is  $x = 6$  and  $y = 0$  a solution to both equations?

$$x^2 + y^2 = 36$$

$$x - 2y = 6$$

Yes because  
these solutions  
work in both  
equations.

What does this tell you about the point  $(6,0)$ ?

It is solution and therefore a point of intersection on the graph of these two equations.



# Understanding solutions to equations with respect to their graphs

3. Is  $(-3, 2)$  a point of intersection of these equations?

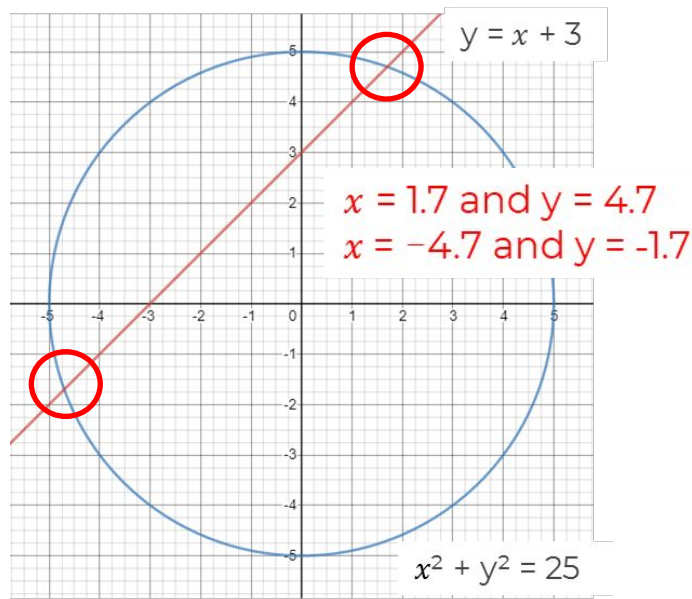
$$x^2 + y^2 = 13$$

$$y = x + 1$$

No because these solutions don't work in the second equation.

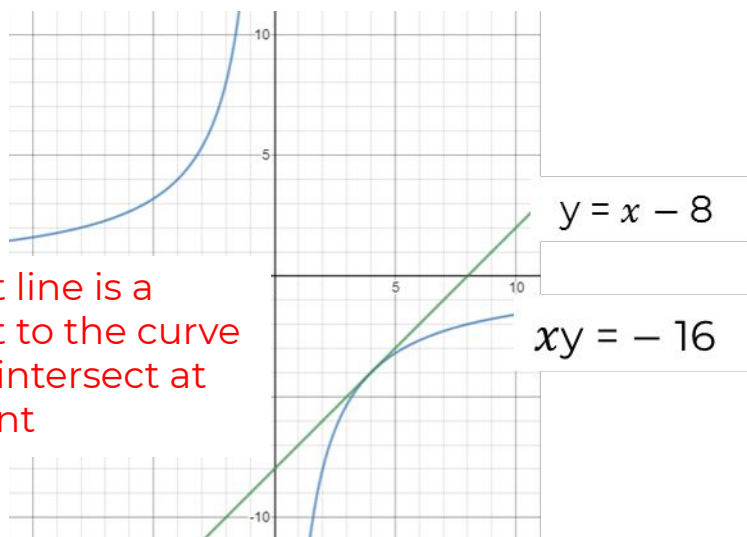
Find the value of  $x$  if  $(x, 3)$  is a point of intersection?  $x = 2$

4. Estimate the solutions of these equations to 1 decimal place.



# Understanding solutions to equations with respect to their graphs

5. Explain why these two equations only have one set of solutions.



Straight line is a tangent to the curve so only intersect at one point

Can you think of two equations where there would be no solutions?

e.g.  $xy = -16$  and  $y = x$

