Maths

Solving Quadratic Equations Graphically

Mr Clasper

Identify and interpret roots, intercepts and turning points

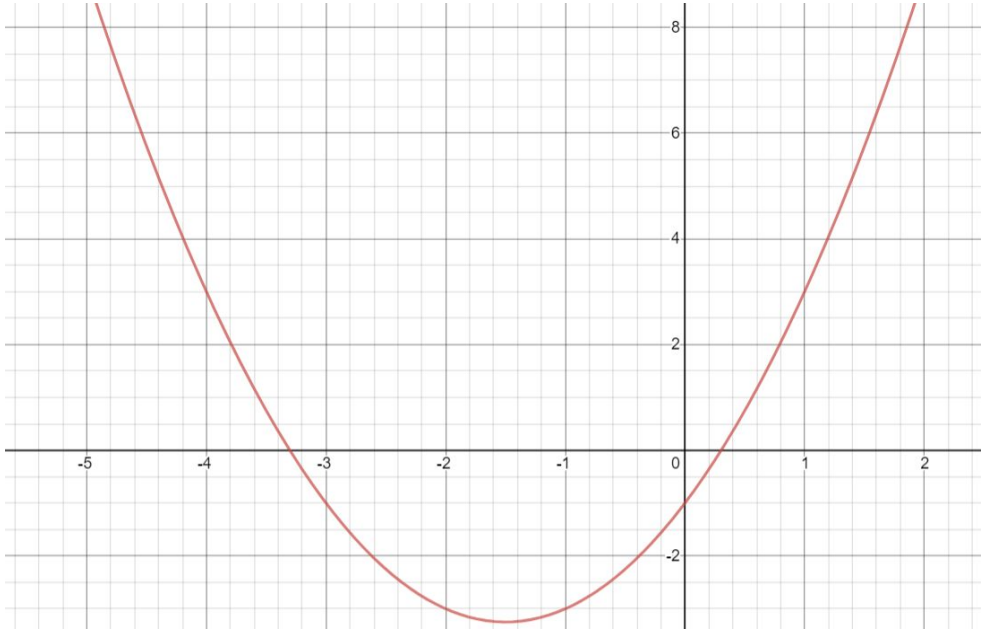
1. Opposite is the graph of

$$y = x^2 + 5x - 1$$

Use the graph to estimate the solutions to

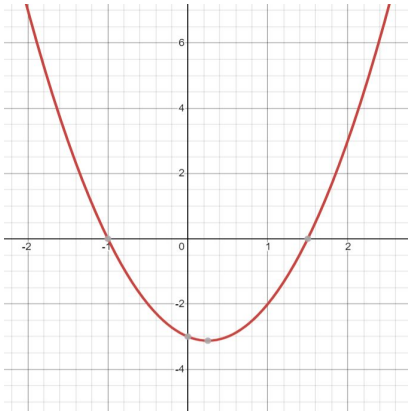
a) $x^2 + 5x - 1 = 0$

b) $x^2 + 5x - 1 = 4$



Identify and interpret roots, intercepts and turning points

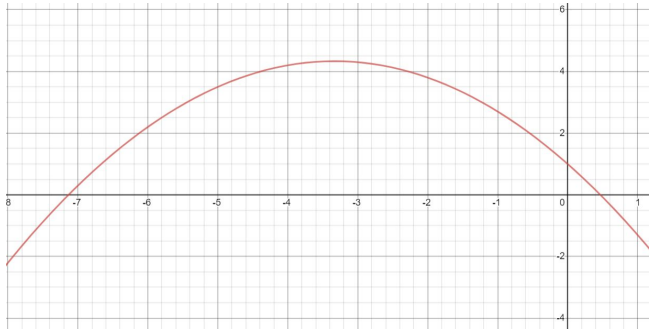
2. Here is the graph of $y = 2x^2 - x - 3$



a) Use the graph to find the exact solutions of $2x^2 - x - 3 = 0$

b) How can you check your solutions?

3. Here is the graph of $y = 1 - 2x - 0.3x^2$



a) Use the graph to find approximate solutions of $1 - 2x - 0.3x^2 = 0$

b) Use the graph to find approximate solutions of $1 - 2x - 0.3x^2 = -1$

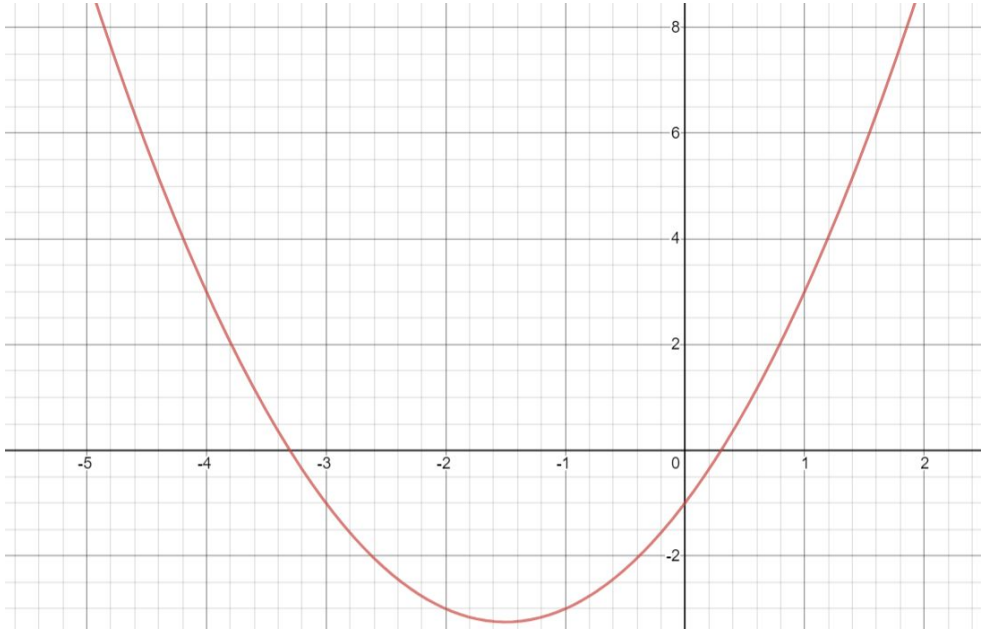
c) Explain why $1 - 2x - 0.3x^2 = 6$ has no solutions.

Answers

Identify and interpret roots, intercepts and turning points

1. Opposite is the graph of

$$y = x^2 + 5x - 1$$



Use the graph to estimate the solutions to

a) $x^2 + 5x - 1 = 0$

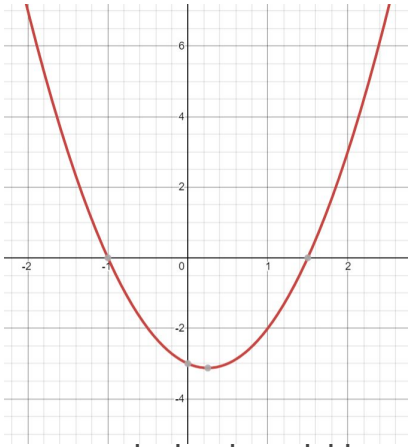
$x = 0.3$ and $x = -3.3$

b) $x^2 + 5x - 1 = 4$

$x = 1.2$ and $x = -4.2$

Identify and interpret roots, intercepts and turning points

2. Here is the graph of $y = 2x^2 - x - 3$

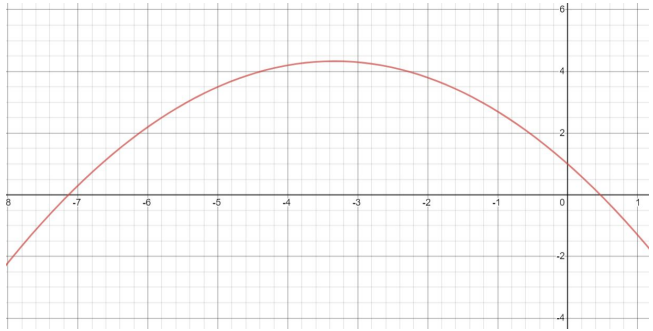


a) Use the graph to find the exact solutions of $2x^2 - x - 3 = 0$ x = 1.5 and x = -1

b) How can you check your solutions?

Substitute in to $y = 2x^2 - x - 3$ and it should equal 0

3. Here is the graph of $y = 1 - 2x - 0.3x^2$



a) Use the graph to find approximate solutions of $1 - 2x - 0.3x^2 = 0$ x = 0.5 and x = -7.1

b) Use the graph to find approximate solutions of $1 - 2x - 0.3x^2 = -1$ x = 0.9 and x = -7.6

c) Explain why $1 - 2x - 0.3x^2 = 6$ has no solutions. When you draw line y = 6 it does not cross the graph.