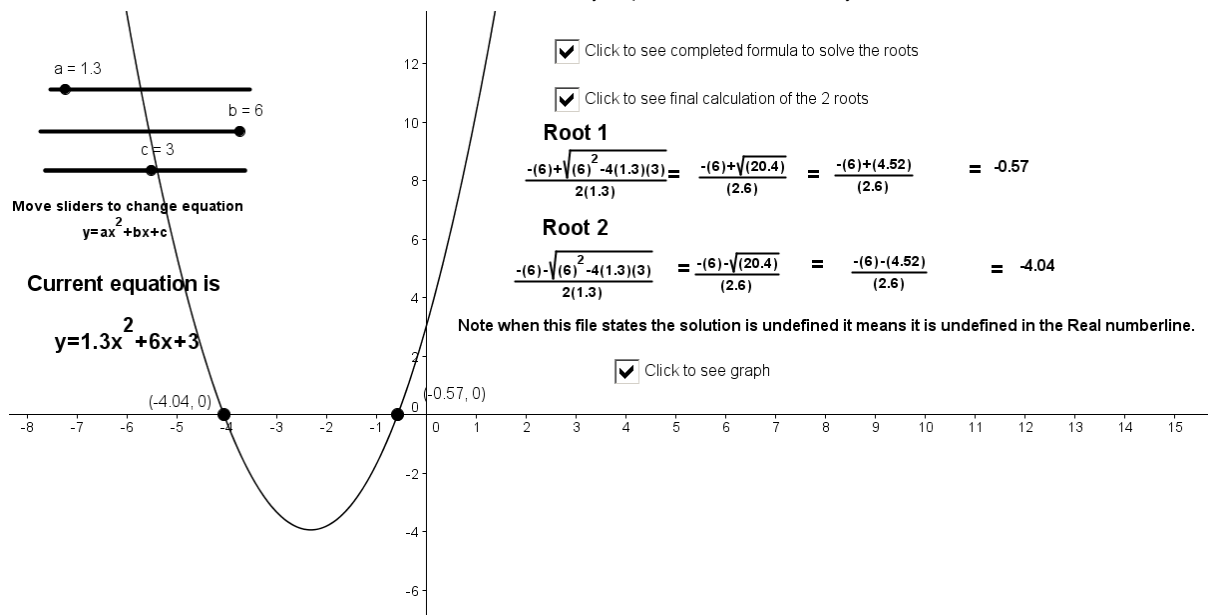


Student Activity: To solve a quadratic equation using the formula

Use in connection with the Interactive file, 'Quadratic formula', on the Student's CD.



1.

- a. Given that the equation $1x^2 + 5x + 4 = 0$ is in the form $ax^2 + bx + c = 0$, what values have a, b and c?

- b. By substituting into the formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ solve the above equation for x.

- c. Use the interactive file to determine, where the graph of the function represented by the equation $y = 1x^2 + 5x + 4$ intersects the x axis.

- d. Is there any relationship between the solution(s) to the equation and where the graph of the function represented by the equation intersects the x axis?

- e. What is the name given to equations of the form $ax^2 + bx + c = 0$?

2. Use the formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ to solve the following equations given in the form $ax^2 + bx + c = 0$:

a. $x^2 + 6x + 9 = 0$

b. $x^2 + 1x - 2 = 0$

c. $x^2 - 6x + 8 = 0$

d. $-x^2 + 3x + 5 = 0$ (Note it is not possible to check this on the interactive file.)

e. $2x^2 + 3x - 5 = 0$

3. Given the solution to an equation of the form $ax^2+bx+c=0$ is $x = \frac{-2 \pm \sqrt{2^2 - 4(1)(-8)}}{2(1)}$

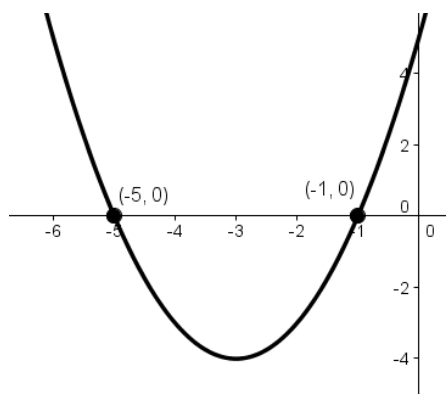
Find a, b and c and hence write down the equation.

4.

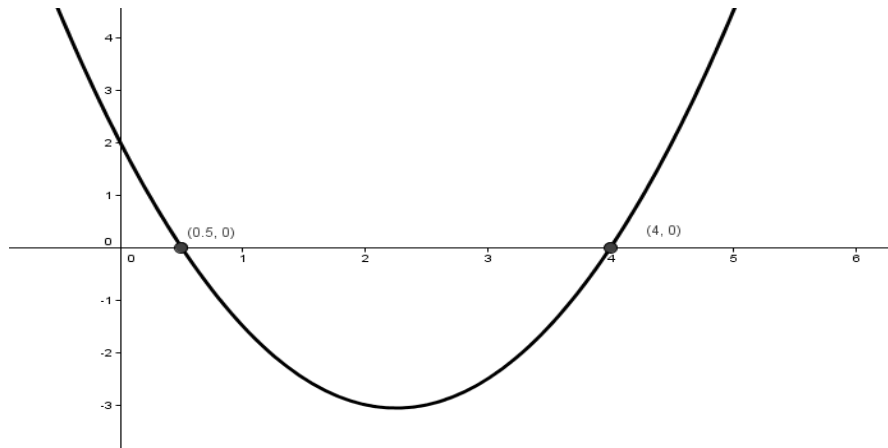
a. Using the interactive file explain how the graph shows that the equation $x^2 + 3x + 3 = 0$ has no real roots.

b. Use the formula to solve $x^2 + 3x + 3 = 0$ and state why it is impossible to solve the equation algebraically for $x \in \mathbb{R}$.

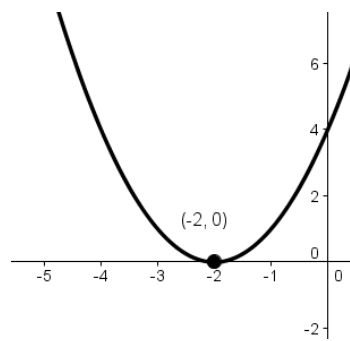
5. What is/are the solution(s) of the equation $x^2+bx+c=0$ represented by the graph below?



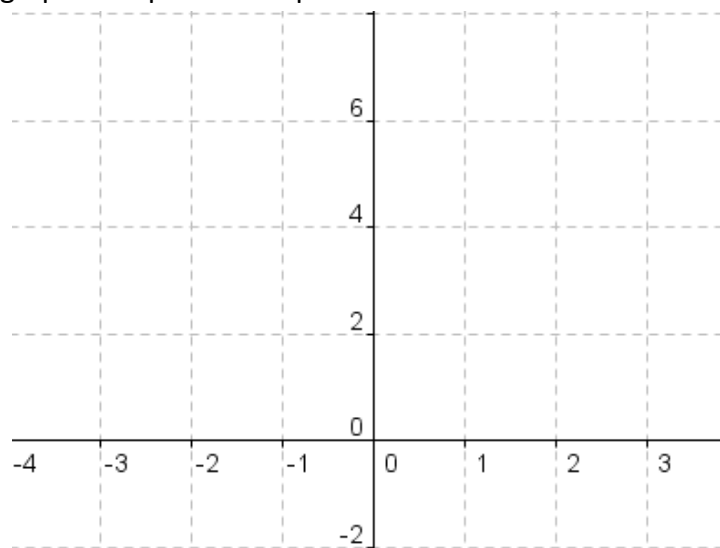
6. What is/are the solution(s) of the equation $x^2+bx+c=0$ represented by the graph below?



7. What is/are the solution(s) of the equation $x^2+bx+c=0$ represented by the graph below?



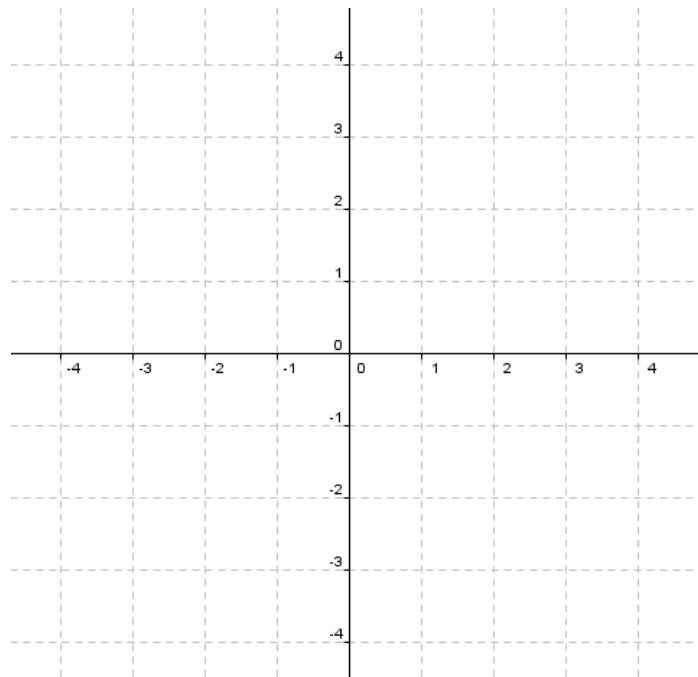
8. Draw a rough graph of a quadratic equation that has no real roots.



9. Explain in your own words what is meant by the solution of a quadratic equation $x^2+bx+c=0$.

10. Solve the equation $x^2 + 4x + 1 = 0$ by formula and then solve the same equation by table and graph (Approximate solutions).

x	$f(x) = x^2 + 4x + 1$	$y = x^2 + 4x + 1$
-4		
-3		
-2		
-1		
0		
1		



11. Will your graphical solution and your algebraic solution always agree? Discuss.
