

Sketching Quadratics

Video 265 on Corbettmaths

Examples

Workout



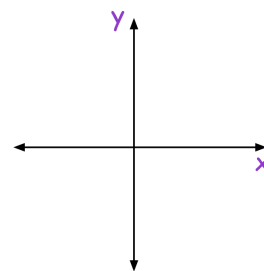
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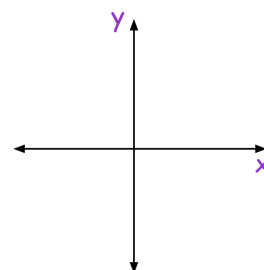
Question 1: Emilio wants to sketch the graph of $y = x^2 - 7x + 10$

- (a) Find the value of y when $x = 0$
- (b) Use your answer to (a) to plot where the graph crosses the y -axis.
- (c) Solve the equation $x^2 - 7x + 10 = 0$
- (d) Use your answers to (c) to help you plot where the graph crosses the x -axis.
- (e) Sketch the graph of $y = x^2 - 7x + 10$



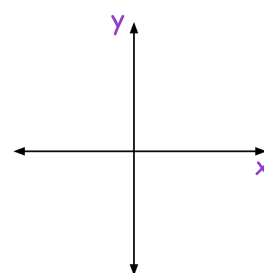
Question 2: Rebecca wants to sketch the graph of $y = x^2 + 7x - 8$

- (a) Find the value of y when $x = 0$
- (b) Use your answer to (a) to plot where the graph crosses the y -axis.
- (c) Solve the equation $x^2 + 7x - 8 = 0$
- (d) Use your answers to (c) to help you plot where the graph crosses the x -axis.
- (e) Sketch the graph of $y = x^2 + 7x - 8$



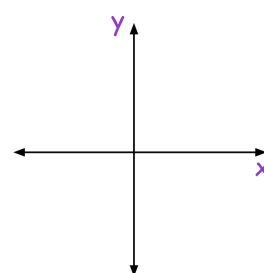
Question 3: Michael wants to sketch the graph of $y = x^2 + 16x + 64$

- (a) Find the value of y when $x = 0$
- (b) Use your answer to (a) to plot where the graph crosses the y -axis.
- (c) Solve the equation $x^2 + 16x + 64 = 0$
- (d) Use your answers to (c) to help you plot where the graph meets the x -axis.
- (e) Sketch the graph of $y = x^2 + 16x + 64$



Question 4: James wants to sketch the graph of $y = x^2 + 4x + 10$

- (a) Find the value of y when $x = 0$
- (b) Use your answer to (a) to plot where the graph crosses the y -axis.
- (c) Show that the equation $x^2 + 4x + 10 = 0$ has no real roots.
- (d) Explain why your answer to (c) means that the graph does not cross the x -axis.
- (e) Find the value of y when $x = 1$
- (e) Sketch the graph of $y = x^2 + 4x + 10$



Question 5: Sketch the following graphs.

(a) $y = x^2 + 6x + 8$

(b) $y = x^2 - x - 6$

(c) $y = x^2 + 6x + 9$

(d) $y = x^2 - 13x + 42$

(e) $y = x^2 + 5x - 36$

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

(g) $y = x^2 + 5x + 11$

(h) $y = x^2 - 4x + 7$

Question 6: Sketch the following graphs.

(a) $y = (x - 7)(x + 10)$

(b) $y = (x + 3)(x + 8)$

(c) $y = (x - 2)^2$

Question 7: Sketch the following graphs.

(a) $y = x^2 - 49$

(b) $y = x^2 - 1$

(c) $y = x^2 - 196$

Question 8: Michael wants to sketch the graph of $y = -x^2 + 5x + 14$

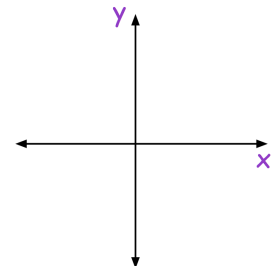
(a) Find the value of y when $x = 0$

(b) Use your answer to (a) to plot where the graph crosses the y -axis.

(c) Solve the equation $-x^2 + 5x + 14 = 0$

(d) Use your answers to (c) to help you plot where the graph crosses the x -axis.

(e) Sketch the graph of $y = -x^2 + 5x + 14$



Question 9: Sketch the following graphs.

(a) $y = -x^2 - 5x - 4$

(b) $y = -x^2 + 9x - 18$

(c) $y = 84 - 5x - x^2$

(d) $y = (3 - x)(x + 8)$

(e) $y = -x^2 - 8x - 16$

(f) $y = 144 - x^2$

Question 10: Robyn wants to sketch the graph of $y = 2x^2 + 9x + 4$

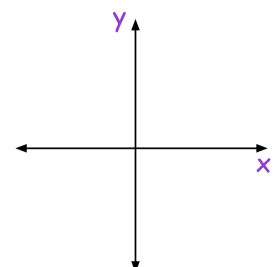
(a) Find the value of y when $x = 0$

(b) Use your answer to (a) to plot where the graph crosses the y -axis.

(c) Solve the equation $2x^2 + 9x + 4 = 0$

(d) Use your answers to (c) to help you plot where the graph crosses the x -axis.

(e) Sketch the graph of $y = 2x^2 + 9x + 4$



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Question 10: Sketch the following graphs

(a) $y = 5x^2 + 13x + 6$

(b) $y = 3x^2 - 16x - 12$

(c) $y = 2x^2 - 13x + 15$

(d) $y = (2x + 5)(2x - 1)$

(e) $y = 3 - 20x - 7x^2$

(f) $y = 4x^2 - 28x + 49$

Question 11: Sketch the following graphs.

Label exactly where each graph crosses the coordinates axes.

(a) $y = x^2 + 4x + 1$

(b) $y = x^2 - 10x + 10$

(c) $y = x^2 - 8x - 2$

(d) $y = x^2 + 18x + 7$

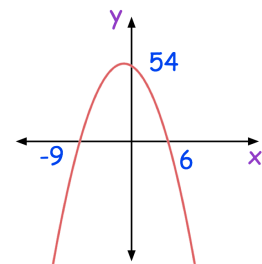
(e) $y = x^2 - 7x - 3$

(f) $y = 2x^2 + 8x + 2$

Apply

Question 1: Dominic sketches the graph of $y = x^2 + 3x - 54$

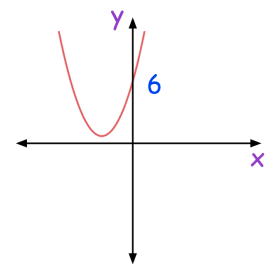
Can you spot any mistakes?



Question 2: Hannah sketches the graph of $y = x^2 - 2x + 6$

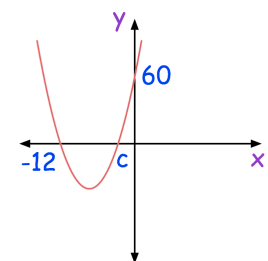
(a) Can you spot any mistakes?

(b) Use the discriminant, $b^2 - 4ac$, to explain why the graph of $y = x^2 - 2x + 6$ does not cross the x-axis.



Question 3: Shown is the graph of $y = x^2 + ax + b$

Find the values of a, b and c.



Answers



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