

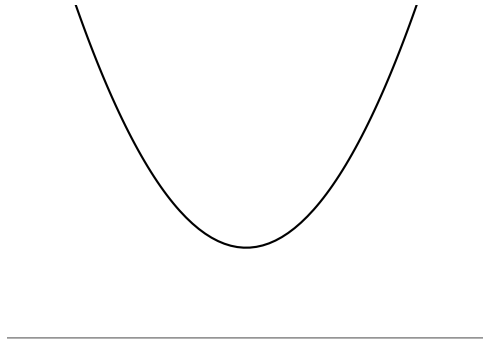
Concept MCQs

1 ID 17 Finding the Discriminant

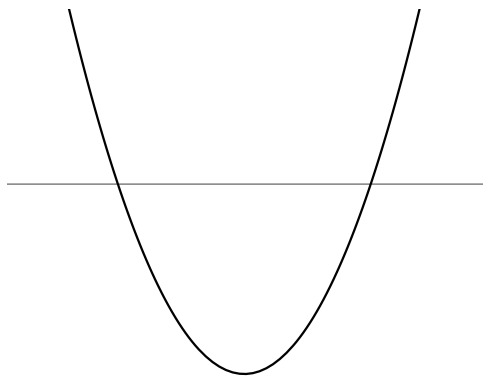
1. A quadratic function is described by $y = ax^2 + bx + c$ Which of the graphs below corresponds to

$$b^2 - 4ac < 0$$

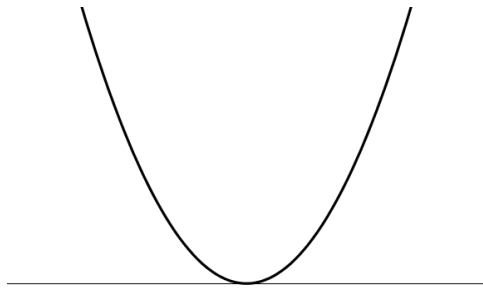
(a) *



(b) .



(c) .

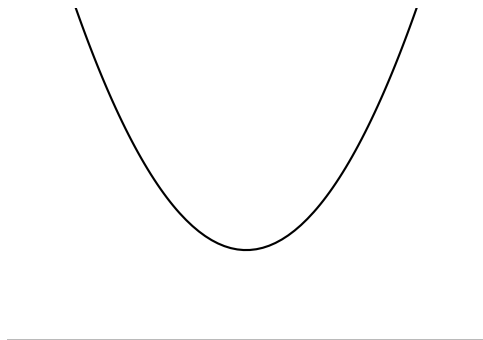


(d) I don't know yet.

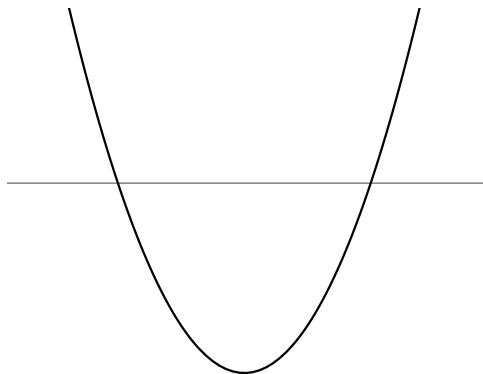
2. Which of the graphs below corresponds to the function:

$$y = x^2 + 6x + 9$$

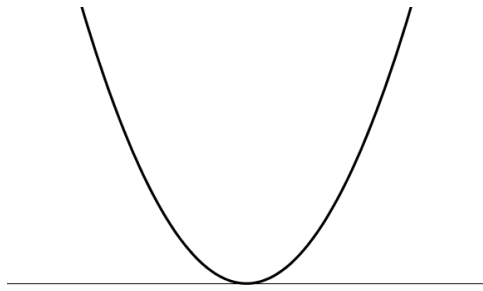
(a) .



(b) .



(c) *

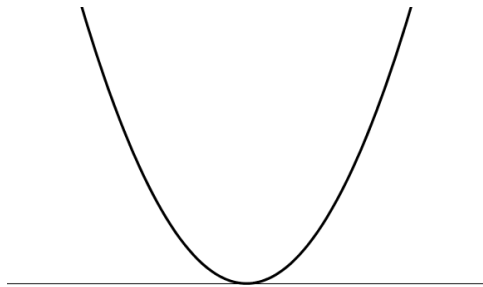


(d) I don't know yet.

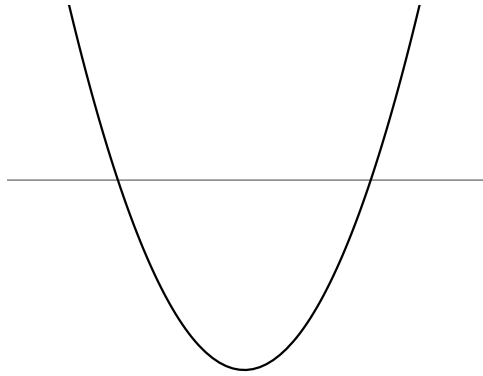
3. Which of the graphs below corresponds to the function:

$$y = x^2 + 6x + 1$$

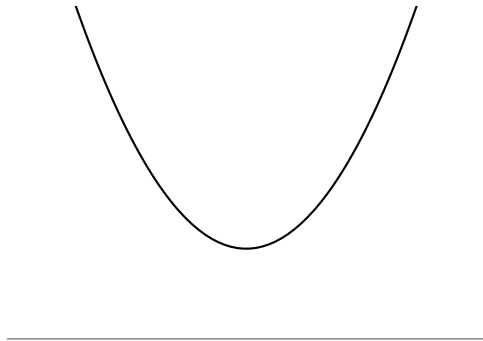
(a) .



(b) *

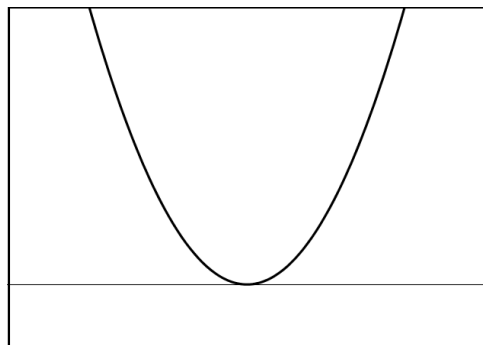


(c) .



(d) I don't know yet.

4. Which of the quadratic functions listed below is best described by the following graph:



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

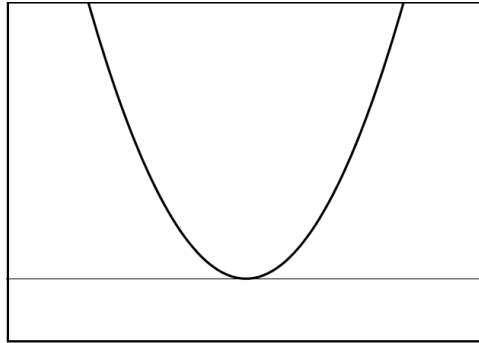
(b) $y = x^2 + 10x + 25$ *

(c) $y = x^2 + x + 10$

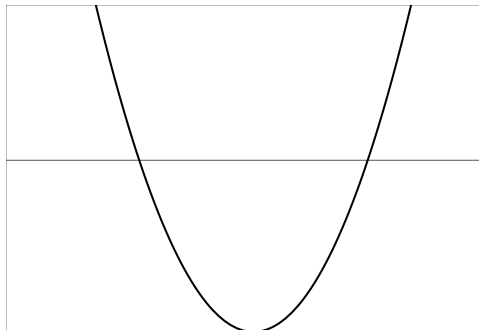
(d) I don't know yet

2 ID 18 Using the discriminant to find unknown coefficients

1. Below is the graph of the function $y = x^2 + bx + 25$.
What is the value of b ?

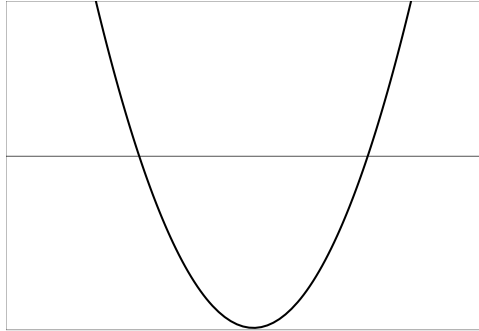


- (a) $b = 5$
(b) $b = 10$ *
(c) $b = 25$
(d) I don't know yet.
2. Below is the graph of the function $y = x^2 + 6x + c$
What range of values describes c ?



- (a) $36 - c > 0$
(b) $c - 36 > 0$
(c) $36 - 4c > 0$ *
(d) $36 - 4c < 0$
(e) I don't know yet.

3. Below is a graph of the function $y = x^2 + (k + 1)x + k$
Which of the inequalities outlined below best describes the function?



- (a) $k^2 - 4k - 4 > 0$
- (b) $(k + 1)^2 - 4k > 0$ *
- (c) $(k + 1)^2 - 4k < 0$
- (d) $k^2 - 4k - 4 < 0$
- (e) I don't know yet.

3 ID 23 Index Equations , $x \in \mathbb{Q}$

1. Solve for x :

$$2^x = \sqrt{2}$$

- (a) $x = 2$
- (b) $x = \frac{1}{2}$ *
- (c) $x = -1$
- (d) $x = \frac{\sqrt{2}}{2}$
- (e) I don't know yet

2. Solve for x :

$$3^x = 9$$

- (a) $x = 2$ *
- (b) $x = 3$
- (c) $x = \frac{1}{2}$
- (d) I don't know yet.

3. Solve for x :

$$25^x = 5$$

- (a) $x = 2$
- (b) $x = 5$

- (c) $x = \frac{1}{5}$
- (d) $x = \frac{1}{2}$ *
- (e) I don't know yet.

4. Solve for x :

$$2^x = \frac{1}{2}$$

- (a) $x = -1$ *
- (b) $x = \frac{1}{4}$
- (c) $x = 2$
- (d) $x = 4$
- (e) I don't know yet.

5. Solve for x :

$$3^x = \frac{1}{9}$$

- (a) $x = 2$
- (b) $x = -2$ *
- (c) $x = \frac{1}{3}$
- (d) $x = 3$
- (e) I don't know yet.

4 ID 7 Long Division in Algebra

1. What is $(x^2 + 5x + 4) \div (x + 4)$

- (a) $(x - 4)$
- (b) $(x + 5)$
- (c) $(x + 1)$ *
- (d) $(x - 1)$
- (e) I don't know yet.

2. What is $(3x^2 + x - 2) \div (x - 1)$

- (a) $(x - 2)$
- (b) $(3x + 2)$ *
- (c) $(x + 3)$
- (d) $(x - 3)$
- (e) I don't know yet.

3. Which of the following expressions is a factor of:

$$x^3 + 4x^2 + x - 6$$

- (a) $(3x - 1)$
- (b) $(3x + 2)$
- (c) $(x + 2)$ *
- (d) $(4x - 6)$
- (e) I don't know

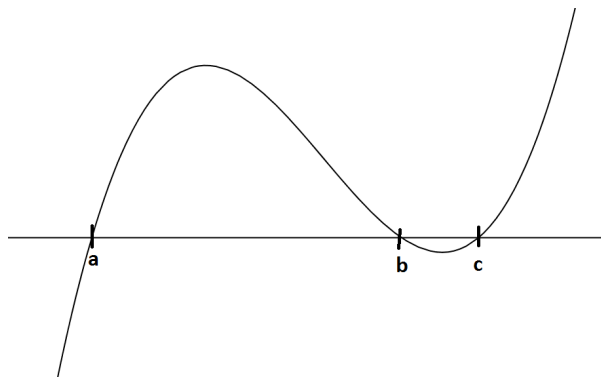
4. Which of the following expressions is a factor of:

$$2x^3 + 3x^2 - 3x - 2$$

- (a) $(2x + 1)$ *
- (b) $(3x - 1)$
- (c) $(3x + 1)$
- (d) $(4x + 1)$
- (e) I don't know yet.

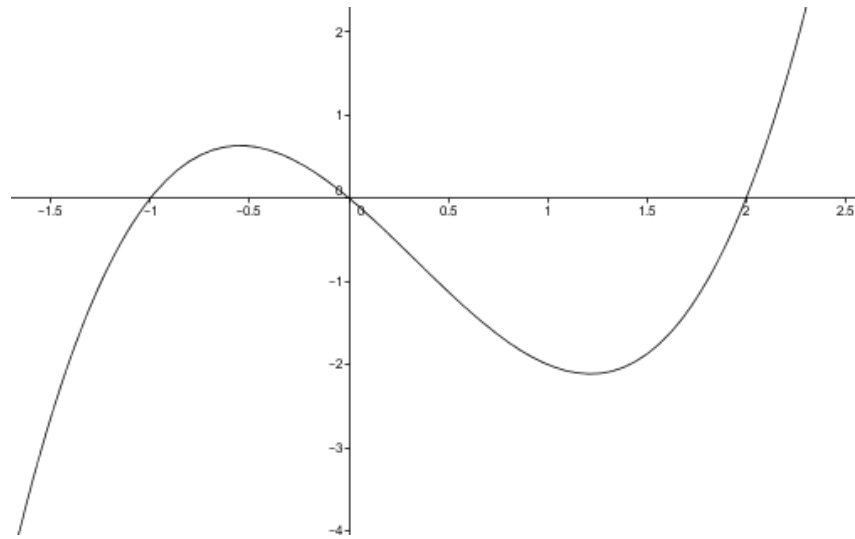
5 ID 19 Solving Cubic Equations

1. $(x - 2)$, $(x + 3)$ and $(x - 1)$ are factors of the expression $x^3 - 7x + 6$. What are the values of a, b and c, in the graph of $y = x^3 - 7x + 6$ below?

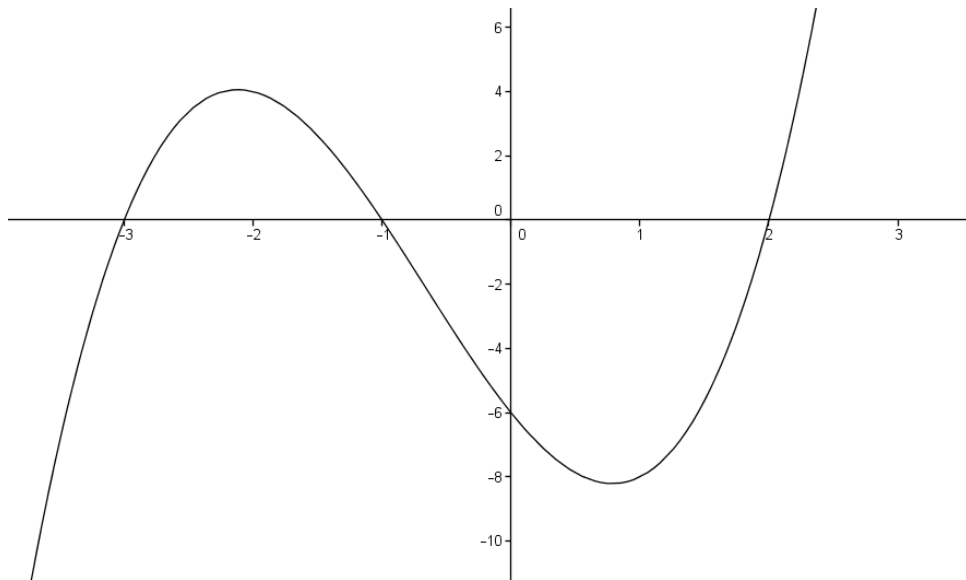


- (a) $a = -3, b = 1, c = 2$ *
- (b) $a = -2, b = -1, c = 3$
- (c) $a = 2, b = 1, c = -3$
- (d) $a = 3, b = -1, c = -2$
- (e) I don't know yet.

2. The function $y = x^3 - x^2 - 2x$ is shown in the graph below. What are the factors of $x^3 - x^2 - 2x$?



- (a) $(x - 1)(x + 2)$
 (b) $x(x - 1)(x + 2)$
 (c) $x(x + 1)(x - 2)$ *
 (d) $(x + 1)(x - 2)$
 (e) I don't know yet.
3. The function $y = x^3 + 2x^2 - 5x - 6$ is shown in the graph. What are the factors of $y = x^3 + 2x^2 - 5x - 6$?



- (a) $(x + 3), (x + 1), (x - 2)$ *
 (b) $(x - 3), (x - 1), (x + 2)$
 (c) $(3x - 1), (x - 1), (2x + 1)$
 (d) I don't know yet.

6 ID16 Surd Equations

1. Solve for x

$$\sqrt{x+3} = 2$$

- (a) $x = 1$ *
 - (b) $x = -1$
 - (c) $x = 5$
 - (d) $x = -5$
 - (e) I don't know
2. What is the appropriate next step in solving the following equation?

$$3\sqrt{x} = x + 2$$

- (a) $3x = x^2 + 4$
- (b) $9x = x^2 + 4$
- (c) $3x = x^2 + 4x + 4$
- (d) $9x = x^2 + 4x + 4$ *
- (e) I don't know yet

7 ID 21 Cubic Equations Unknown Coefficients using roots

1. $(x - 1)$ is a factor of $x^3 - 6x^2 + 11x + k$
What is the value of k ?

- (a) $k = 5$
- (b) $k = 6$
- (c) $k = -5$
- (d) $k = -6$ *
- (e) I don't know yet.

2. $(x + 1)$ is a factor of $x^3 + kx^2 + x + 6$
What is the value of k ?

- (a) $k = -4$ *
- (b) $k = 1$
- (c) $k = 4$
- (d) $k = -1$
- (e) I don't know yet.

3. Which of the statements below is true considering $(x+1)$ is a factor of x^3+ax^2+bx-6
- (a) $a - b - 7 = 0$ *
 - (b) $a + b - 7 = 0$
 - (c) $a + b - 5 = 0$
 - (d) I don't know

8 ID 30 Simultaneous Linear equations Two Variables

1. Which of the options below is the correct solution to the following simultaneous equations?

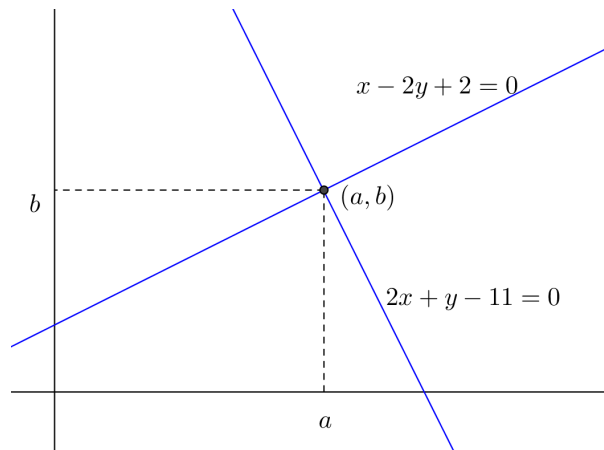
$$\begin{aligned}x + y &= 3 \\x - y &= -1\end{aligned}$$

- (a) $x = 1 \ y = 2$ *
 - (b) $x = 3 \ y = 0$
 - (c) $x = 2 \ y = 1$
 - (d) $x = -3 \ y = -2$
 - (e) I don't know yet.
2. Which of the options below is the correct solution to the following simultaneous equation:

$$\begin{aligned}3x + y &= 7 \\2x - y &= 8\end{aligned}$$

- (a) $x = 2 \ y = 1$
- (b) $x = -1 \ y = 4$
- (c) $x = 3 \ y = -2$ *
- (d) $x = 5 \ y = 2$
- (e) I don't know yet.

3. The lines $x - 2y + 2 = 0$ and $2x + y - 11 = 0$ intersect at the point (a, b) [see graph]. What are the values of a and b ?



- (a) $a = 3$ $b = 4$
- (b) $a = 4$ $b = 3$ *
- (c) $a = 2$ $b = 1$
- (d) $a = 5$ $b = 1$
- (e) I don't know yet

9 ID 9 Manipulation of Formulae

1. If $3x = 2z - y$, express x in terms of y and z .

- (a) $x = 2z - y - 3$
- (b) $x = \frac{2z-y}{3}$ *
- (c) $x = \frac{2z}{3} - y$
- (d) $y = 2z - 3x$
- (e) I don't know yet

2. If $az - bz = 3ab$, express z in terms of a and b .

- (a) $z = \frac{3ab}{a-b}$ *
- (b) $z = \frac{3ab+bz}{a}$
- (c) $z = 3ab + b - a$
- (d) I don't know yet

3. If $3x = 4z + bx$, express x in terms of z and b .

- (a) $x = \frac{4z+bx}{3}$
- (b) $x = 4z + bx - 3$
- (c) $x = 4z + b - 3$
- (d) $x = \frac{4z}{3-b}$ *
- (e) I don't know yet