

Linear and Quadratic Equations

Exercise 2.2 — Complete Solutions

Class 10th Mathematics

Step-by-step worked solutions for Exercise 2.2

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EXERCISE 2.2

1. Find the points of intersection of the following linear equations with coordinate axes graphically:

(i) $x + y = 8$	(ii) $x - y = 1$	(iii) $x - 2y = 1$
(iv) $x - 2y + 2 = 0$	(v) $5x - 5y = 1$	
2. Solve the following system of linear equations graphically:

(i) $x + y = 8$	(ii) $x - y = 1$	(iii) $x - 2y = 1$
$3x - y = 4$	$x + 2y = 7$	$2x + y = 2$
(iv) $y = 2x + 2$	(v) $3y = 2x + 8$	
$3x + 2y = 4$	$x + y = 1$	
3. Solve the following equations graphically:

(i) $y = 8x - 32$	(ii) $y + x = 2$
$y = x^2 - 6x + 8$	$y = 2x^2 + x - 10$

Linear and Quadratic Equations - Exercise 2.2 Solutions

Question 1: Find the points of intersection with coordinate axes

Recall:

- For x-intercept, set $y = 0$ and solve for x
- For y-intercept, set $x = 0$ and solve for y

(i)

Step 1: For x-intercept ($y = 0$): $\rightarrow$

Step 2: For y-intercept ($x = 0$): $\rightarrow$

Answer:

-
-

(ii)

Step 1: For x-intercept ($y = 0$): $\rightarrow$

Step 2: For y-intercept ($x = 0$): $\rightarrow \rightarrow$

Answer:

-
-

(iii)

Step 1: For x-intercept ($y = 0$): $\rightarrow$

Step 2: For y-intercept ($x = 0$): $\rightarrow \rightarrow$

Answer:

-
-

(iv)

Step 1: Rewrite:

Step 2: For x-intercept (): →

Step 3: For y-intercept (): → →

Answer:

- -
-

(v)

Step 1: Simplify:

Step 2: For x-intercept (): →

Step 3: For y-intercept (): → →

Answer:

- -
-

Question 2: Solve the following system of linear equations graphically

(i)

(ii)

Step 1: Find intercepts for first equation:

- x-intercept:
- y-intercept:

Step 2: Find intercepts for second equation:

- x-intercept:
- y-intercept:

Step 3: Solve algebraically:

Add equations: →

Substitute: →

Answer:

(iii)

(iv)

Step 1: Find intercepts for first equation:

- x-intercept:
- y-intercept:

Step 2: Find intercepts for second equation:

- x-intercept:
- y-intercept:

Step 3: Solve algebraically:

From first:

Substitute in second:

→ →

Answer:

(v)

(vi)

Step 1: Find intercepts for first equation. Class 10th Mathematics — Exercise 2.2

- x-intercept:
- y-intercept:

Step 2: Find intercepts for second equation:

- x-intercept:
- y-intercept:

Step 3: Solve algebraically:

From first:

Substitute in second:

→ →

Answer:

Question 3: Solve the following equations graphically

(i)

Step 1: Find x-intercept (): → →

Step 2: Find y-intercept (): →

Step 3: This is a straight line. Plot points and

Answer:

(ii)

Step 1: Rewrite:

Step 2: x-intercept: →

Step 3: y-intercept:

Answer:

(iii)

Step 1: This is a parabola opening upward.

Step 2: Find x-intercepts (roots):

and

Step 3: Find y-intercept ():

Step 4: Find vertex:

Answer:

- -
 -
-

(iv)

Step 1: This is a parabola opening upward.

Step 2: Find x-intercepts (roots):

or

Step 3: Find y-intercept ():

Step 4: Find vertex:

Answer:

-

Final Answers Summary

Question 1: Intercepts

Equation	x-intercept	y-intercept
(i)		
(ii)		
(iii)		
(iv)		
(v)		

Question 2: System Solutions

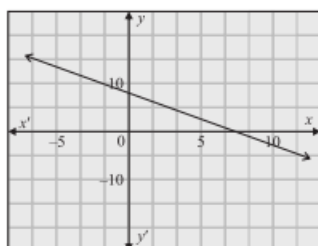
System	Intersection Point
(i) & (ii)	
(iii) & (iv)	
(v) & (vi)	

Question 3: Key Points

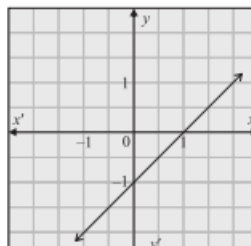
Equation	Type	Key Points
	Line	
	Line	
	Parabola	x-int: , y-int: , Vertex:
	Parabola	x-int: , y-int: , Vertex:

Graphical Solution

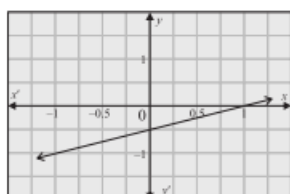
1. (i) $(8, 0)$ and $(0, 8)$



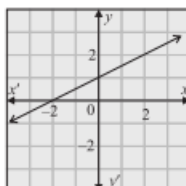
(ii) $(1, 0)$ and $(0, -1)$



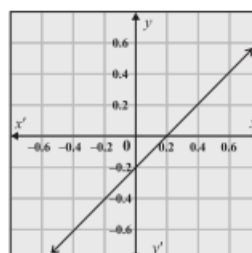
(iii) $(1, 0)$ and $(0, -0.5)$



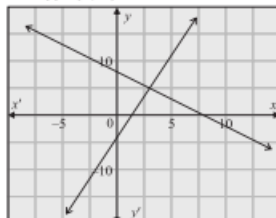
(iv) $(-2, 0)$ and $(0, 1)$



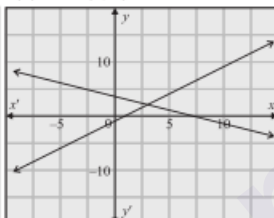
(v) $(0.2, 0)$ and $(0, -0.2)$



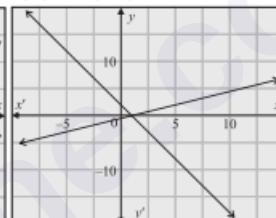
2. (i) $(3, 5)$



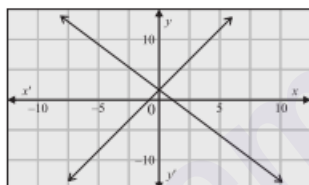
(ii) $(3, 2)$



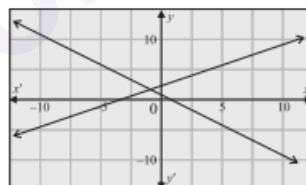
(iii) $(1, 0)$



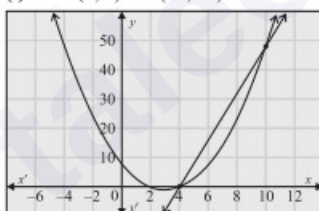
(iv) $(0, 2)$



(v) $(-1, 2)$



3. (i) $(4, 0)$ and $(10, 48)$



(ii) $(2, 0)$ and $(-3, 5)$

