



I. Straight Line:

1. Find the equation of the straight line passing through each pair of the following points:

a. (1, 2) and (3, 3).

Solution: [$y = 0.5x + 1.5$]

b. (-2, 0) and (4, 3).

Solution: [$y = 0.5x + 1$]

c. (1, 1) and (0, 3).

Solution: [$y = -2x + 3$]

d. (0, 7) and (2, 5).

Solution: [$y = -x + 7$]

e. (4, 6) and (2, 2).

Solution: [$y = 2x - 2$]

f. (0, 0) and (1, 4).

Solution: [$y = 4x$]

g. (-1, -2) and (1, 6).

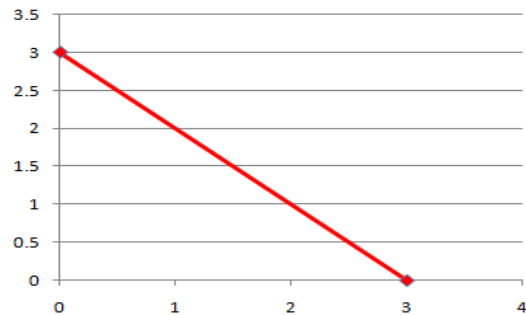
Solution: [$y = 4x + 2$]

2. Find and graph the equation of the straight line passing through the point (1, 2) and perpendicular to the line passing through the points (1, 3) and (2, 4).

Solution:

The equation of the straight line:

$$[y = -x + 3]$$

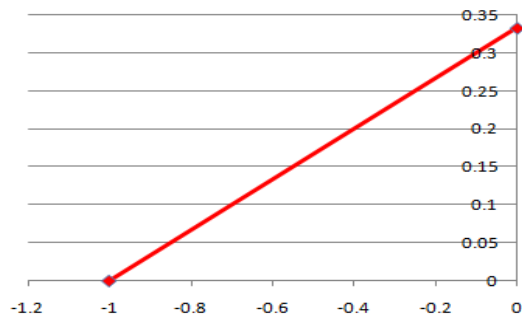


3. Find and graph the equation of the straight line passing through the point (1, 2) and perpendicular to the line passing through the points (3, 1) and (0, 2).

Solution:

The equation of the straight line:

$$[y = 3x - 1]$$





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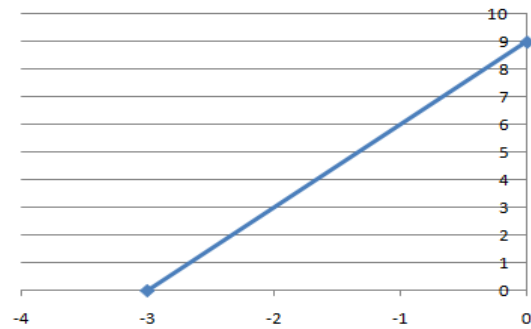
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4. Find and graph the equation of the straight line passing through the point $(-2, 3)$ and parallel to the line passing through the points $(1, 0)$ and $(2, 3)$.

Solution:

The equation of the straight line:

$$[y = 3x + 9]$$



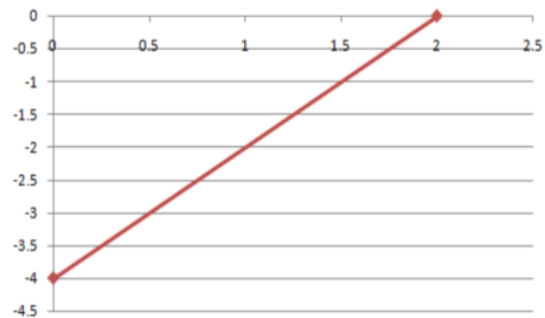
5. Find and graph the equation of the straight line passing through the point of intersection of the two lines $2x + 5y = 4$ and $3x + 2y = 6$ and perpendicular to the line $2x + 4y = 16$.

Solution:

Point of intersection = $(2, 0)$

The equation of the straight line:

$$[y = 2x - 4]$$



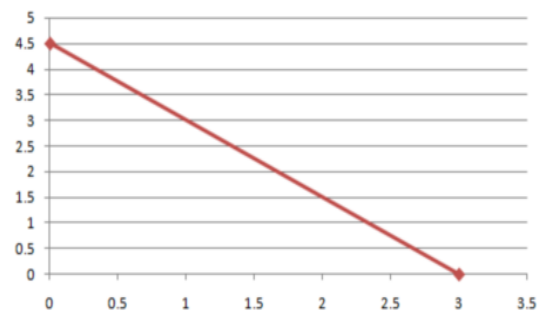
6. Find and graph the equation of the straight line passing through the point of intersection of the two lines $x - 2y = 3$ and $x + y = 3$ and perpendicular to the line $2x - 3y = 4$.

Solution:

Point of intersection = $(3, 0)$

The equation of the straight line:

$$[y = -1.5x + 4.5]$$



7.



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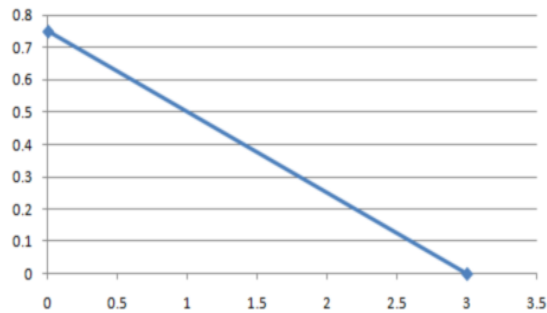
8. Find and graph the equation of the straight line passing through the point of intersection of the two lines $-2x + 3y = 5$ and $4x + y = -3$ and parallel to the line $x + 4y = 0$.

Solution:

Point of intersection = (-1, 1)

The equation of the straight line:

$$[y = -0.25x + 0.75]$$



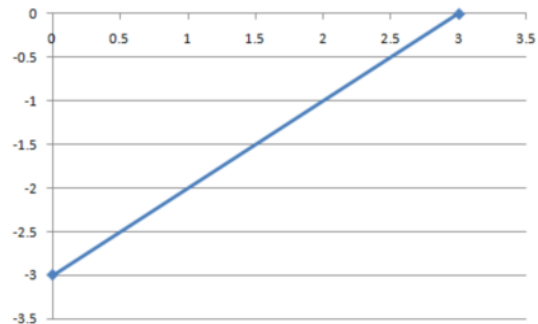
9. Find and graph the equation of the straight line passing through the point of intersection of the two lines $2x - 2y = 6$ and $4x + y = 2$ and parallel to the straight line passing through the two points (-2, 0) and (1, 3).

Solution:

Point of intersection = (1, -2)

The equation of the straight line:

$$[y = x - 3]$$



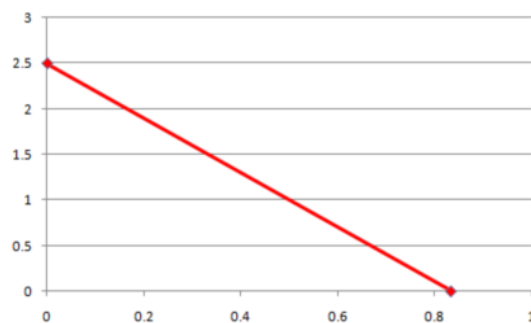
10. Find and graph the equation of the straight line passing through the point of intersection of the two lines $3x + 2y = 5$ and $2x - 2y = -5$ and perpendicular to the straight line passing through the two points (-1, 0) and (5, 2).

Solution:

Point of intersection = (0, 2.5)

The equation of the straight line:

$$[y = -3x + 2.5]$$





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11. Find and graph the equation of the straight line passing through the point of intersection of the two lines $-2x + 3y = 6$ and $3x + y = 2$ and the point of intersection of the two lines $2x - y = 5$ and $2x + 3y = 1$.

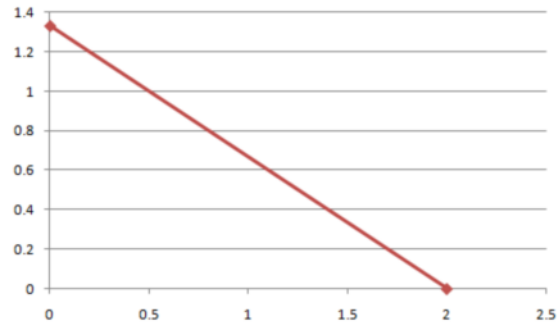
Solution:

1st Point of intersection = (0, 2)

2nd Point of intersection = (2, -1)

The equation of the straight line:

$$[y = -1.5x + 2]$$



12. Find and graph the equation of the straight line passing through the point of intersection of the two lines $2x - y = 1$ and $3x + 2y = 5$ and the point of intersection of the two lines $3x + 4y = 2$ and $x - 2y = 4$.

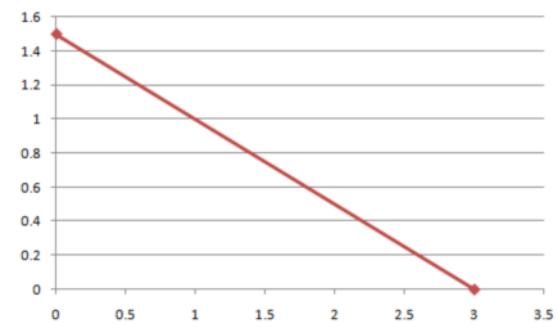
Solution:

1st Point of intersection = (1, 1)

2nd Point of intersection = (2, -1)

The equation of the straight line:

$$[y = -2x + 3]$$



13. Find and graph the equation of the straight line passing through the point of intersection of the two lines $4x - 3y = -5$ and $x - 2y = -5$ and the point of intersection of the two lines $2x + 3y = 10$ and $x + y = 4$.

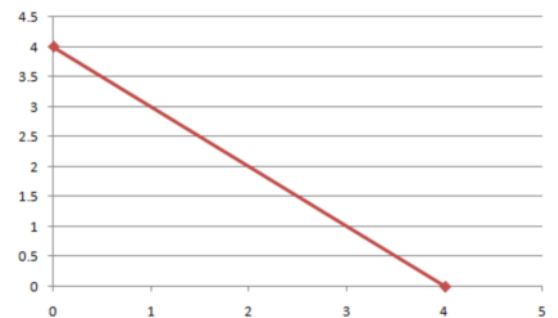
Solution:

1st Point of intersection = (1, 3)

2nd Point of intersection = (2, 2)

The equation of the straight line:

$$[y = -x + 4]$$





II. Parabola:

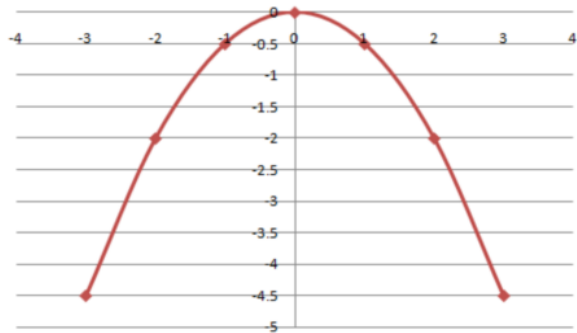
1. Discuss and graph the parabola $x^2 + 2y = 0$.

Solution:

Vertex: $(0, 0)$

Axis of symmetry: $x = 0$

x	-3	-2	-1	0	1	2	3
y	-4.5	-2	-0.5	0	-0.5	-2	-4.5



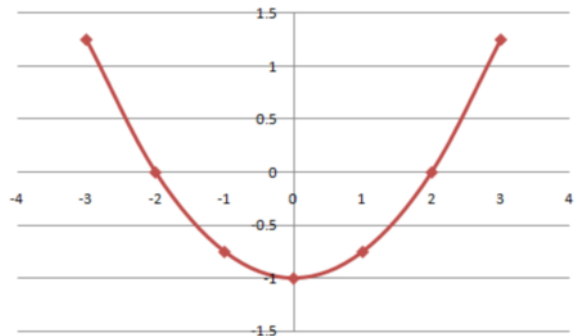
2. Discuss and graph the parabola $x^2 - 4y - 4 = 0$.

Solution:

Vertex: $(0, -1)$

Axis of symmetry: $x = 0$

x	-3	-2	-1	0	1	2	3
y	1.25	0	-0.75	-1	-0.75	0	1.25



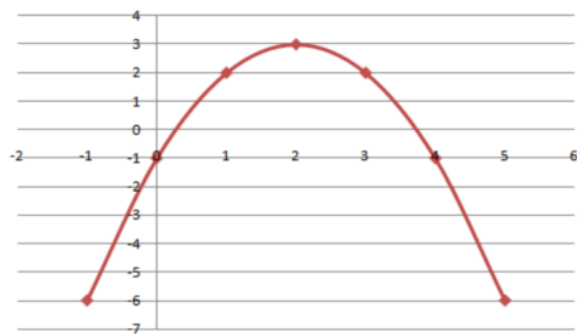
3. Discuss and graph the parabola $x^2 - 4x + y + 1 = 0$.

Solution:

Vertex: $(2, 3)$

Axis of symmetry: $x = 2$

x	-1	0	1	2	3	4	5
y	-6	-1	2	3	2	-1	-6





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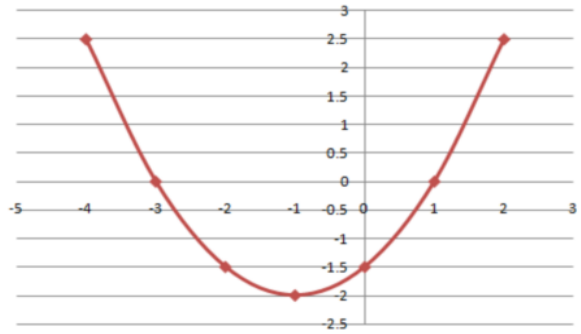
4. Discuss and graph the parabola $x^2 + 2x - 2y - 3 = 0$.

Solution:

Vertex: $(-1, -2)$

Axis of symmetry: $x = -1$

x	-4	-3	-2	-1	0	1	2
y	2.5	0	-1.5	-2	-1.5	0	2.5



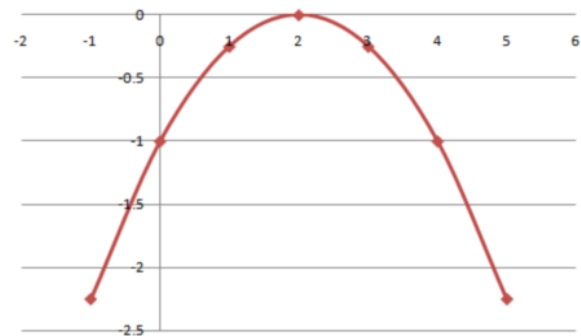
5. Discuss and graph the parabola $x^2 - 4x + 4y + 4 = 0$.

Solution:

Vertex: $(2, 0)$

Axis of symmetry: $x = 2$

x	-1	0	1	2	3	4	5
y	-2.25	-1	-0.25	0	-0.25	-1	-2.25



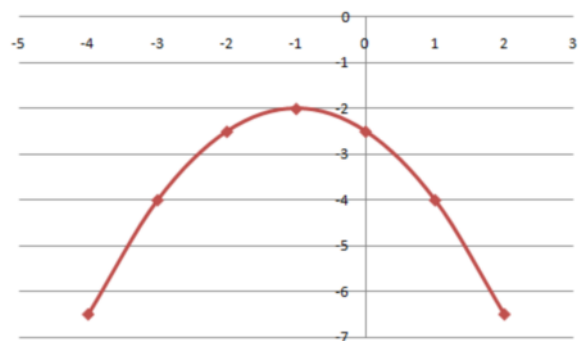
6. Discuss and graph the parabola $x^2 + 2x + 2y + 5 = 0$.

Solution:

Vertex: $(-1, -2)$

Axis of symmetry: $x = -1$

x	-4	-3	-2	-1	0	1	2
y	-6.5	-4	-2.5	-2	-2.5	-4	-6.5





III. Hyperbola:

1. Determine the center and asymptotes of the hyperbola: $y = \frac{x+5}{x+2}$.

Center: (-2, 1); **Vertical asymptote:** $x = -2$; **Horizontal asymptote:** $y = 1$

2. Determine the center and asymptotes of the hyperbola: $y = \frac{4x-2}{2x-1}$.

Center: (0.5, 2); **Vertical asymptote:** $x = 0.5$; **Horizontal asymptote:** $y = 2$

3. Determine the center and asymptotes of the hyperbola: $y = \frac{x-1}{2x+3}$.

Center: (-1.5, 0.5); **Vertical asymptote:** $x = -1.5$; **Horizontal asymptote:** $y = 0.5$

4. Determine the center and asymptotes of the hyperbola: $y = \frac{3x+2}{x+2}$.

Center: (-2, 3); **Vertical asymptote:** $x = -2$; **Horizontal asymptote:** $y = 3$

5. Determine the center and asymptotes of the hyperbola: $y = \frac{4x+1}{-x+3}$.

Center: (3, -4); **Vertical asymptote:** $x = 3$; **Horizontal asymptote:** $y = -4$

6. Determine the center and asymptotes of the hyperbola: $y = \frac{-x-2}{-2x+1}$.

Center: (0.5, 0.5); **Vertical asymptote:** $x = 0.5$; **Horizontal asymptote:** $y = 0.5$

7. Determine the center and asymptotes of the hyperbola: $y = \frac{5x+1}{2x+3}$.

Center: (-1.5, 2.5); **Vertical asymptote:** $x = -1.5$; **Horizontal asymptote:** $y = 2.5$