4. 3 Another Form of the Equations for a Linear Relation

Jumpstart Your Thinking

Graph the following equations

 x = 3 y = -2

The x-coordinates for every point The y-coordinate for ever point

on this line is x = 3 on this line is y = -2

…(3,-2)(3,-1)(3,0)(3,1)(3,2)… …(-2,-2)(-1,-2)(0,-2)(1,-2)2,-2)…

Let’s Look at the Math

The graph of the equation x = a, where a is a constant, is a vertical line. Every point on the graph has an x-coordinate of a.

The graph of the equation y =a, where a is a constant, is a horizontal line. Every point on the graph has a y-coordinate of a.1. a) x – 4 = -8 Isolate x b) 2y = 7 Isolate y

y

x

8

8

-8

-8

yyy

xxx

888

888

-8-8-8

-8-8-8

2. Does each equation describe a vertical, a horizontal, or an oblique line?
**a)** *y* = 4 **b)** 2*x* + 5 = 7

**c)** 2*x* – *y* = 6 **d)** 3*y* + 9 = 0

3. Which equation below describes each graph? How do you know?

 **a) b)**

 **i)** *x* = 2 **ii)** *x* = –2

 **iii)** *y* = 2 **iv)** *y* = –2

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4. Graph each line. Explain your work.

**a)** *x* = 4 **b)** 2*y* = 6

**c)** *y* – 2 = –6 **d)** 2*x* + 3 = 8

y

x

8

8

-8

-8

y

x

8

8

-8

-8

Let’s Look at the Math…

Some equations can be written with both variables on the same side but they can still represent a linear relation. Let’s take a look.

5. Graph 3x – 2y = 6

a) Set up a table of values using the x values given.

|  |  |  |
| --- | --- | --- |
|  | *x* | *y* |
|  | -4 |  |
|  | -2 |  |
|  | 0 |  |
|  | 2 |  |
|  | 4 |  |

b) Graph the equation.

y

x

8

8

-8

-8

6. Graph: 5x – y = 3; for x = -2, -1, 0, 1, 2

y

x

8

8

-8

-8

|  |  |  |
| --- | --- | --- |
|  | *x* | *y* |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |