

Jan. 10, 2018

Sect. 1-5

Relations ; Graphing

Defn

Dom / Range

Graphing

Relation: A set of ordered pairs. (x, y)

e.g. $A = \{(2, 5), (-3, 1), (4, -5), (7, 1)\}$

In a relation, we can find the
domain
range

Domain: The set of all x -numbers

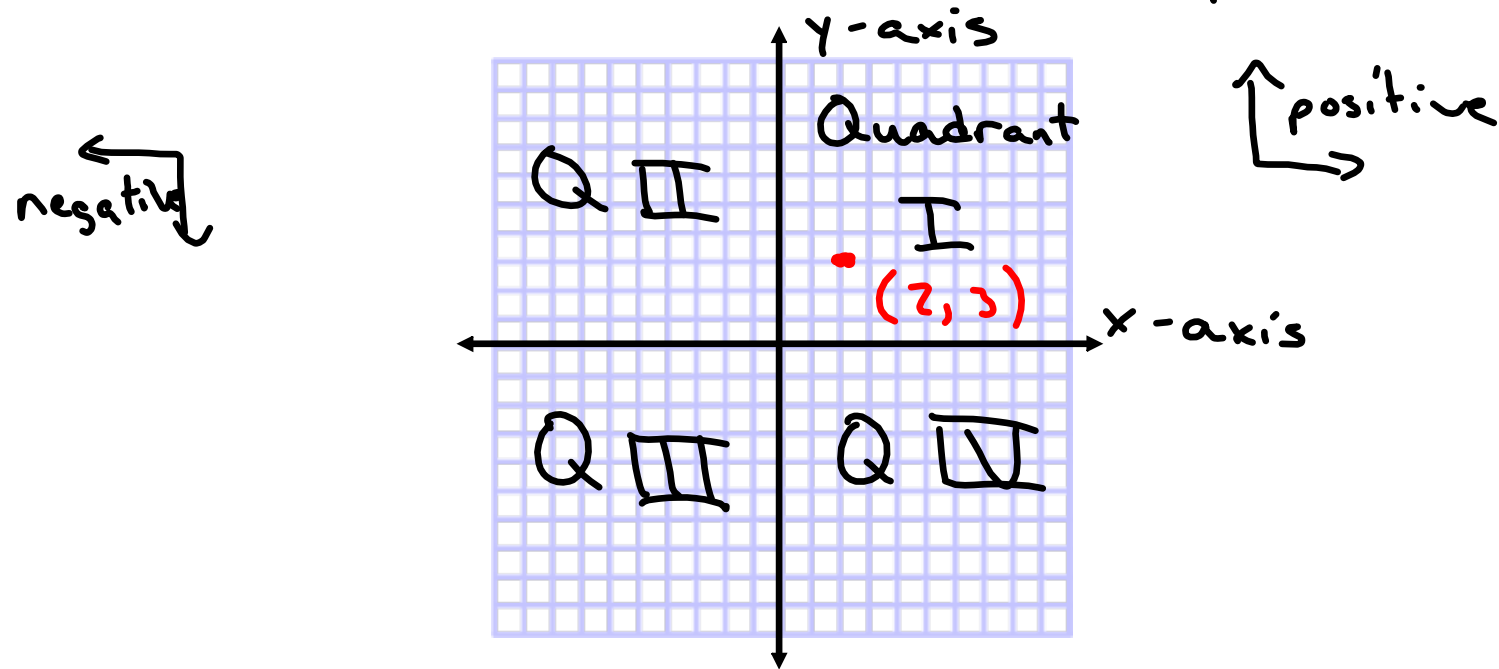
Range: The set of all y -numbers

$$A : \{ (2, 5), (-3, 1), (4, -5), (7, 1) \}$$

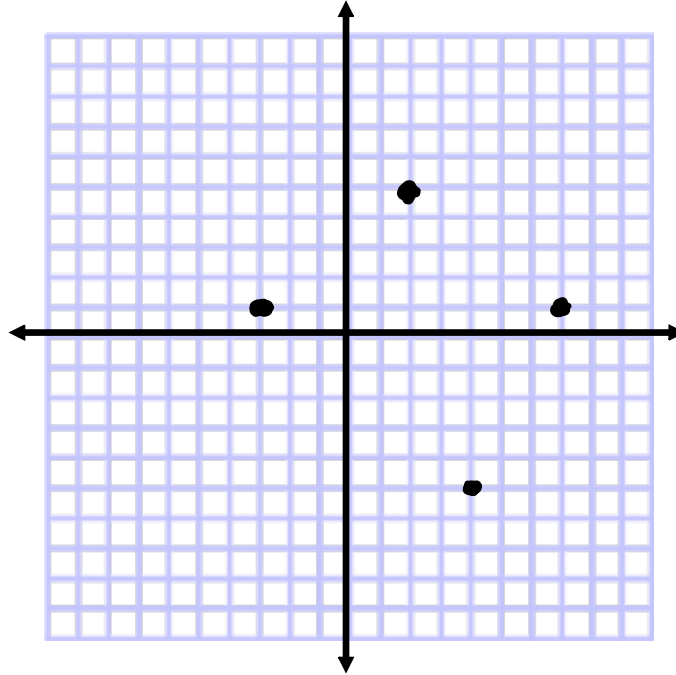
$$\text{Domain: } \{ 2, -3, 4, 7 \} \text{ or } \{ -3, 2, 4, 7 \}$$

$$\text{Range: } \{ 5, 1, -5, \cancel{1} \} \text{ or } \{ -5, 1, 5 \}$$

We can graph or plot relations on
the Cartesian Plane (xy plane)



$$\text{Plot } A : \{ (2, 5), (-3, 1), (4, -5), (7, 1) \}$$



For relations defined as equations

$$y = 2x - 3$$

We can create a table by
picking random x -values
and plugging them in.

Let's pick 4:

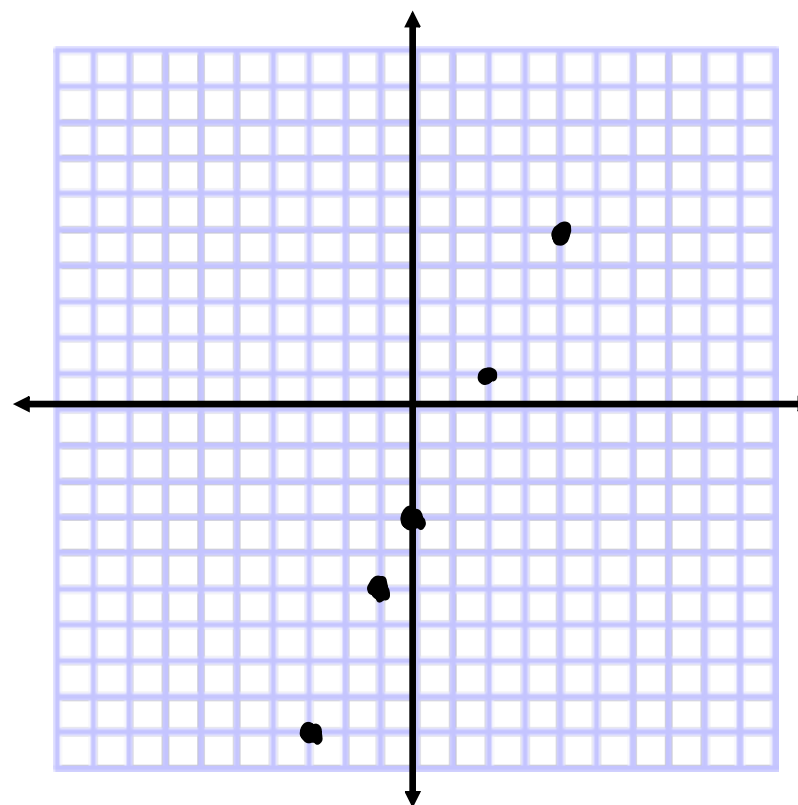
$$\begin{aligned} y &= 2(4) - 3 \\ &= 8 - 3 \\ &= 5 \end{aligned}$$

$$y = 2x - 3$$

x	y
-3	-9
-1	-5
0	-3
2	-1
4	5

$\rightarrow (-3, -9)$

$\rightarrow (-1, -5)$



We can graph relations on a calculator
(I am using a TI-84)

Let's graph the relation

$$A : \{ (2, 5), (-3, 1), (4, -5), (7, 1) \}$$

First we need to tell the calc. that we
are graphing ordered pairs

Turn on {StatPlot}

```
Plot1 Plot2 Plot3
On Off
Type: [ ] [ ] [ ]
      [ ] [ ] [ ]
Xlist:L1
Ylist:L2
Mark: [ ] [ ] [ ]
```

Enter the ordered pairs in a list

{Stat} → [Edit]

```

CALC TESTS
1: Edit...
2: SortA(
3: SortD(
4: ClrList
5: SetUpEditor
  
```

Select 1: Edit

L1	L2	L3	1
██████	-----	-----	
L1(1) =			

Type in the
ordered pairs

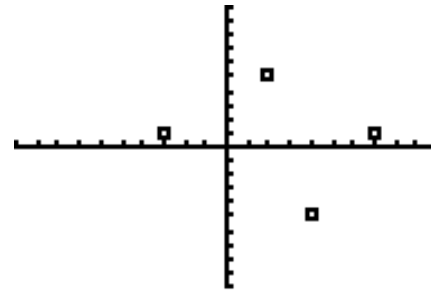
L1	L2	L3	Z
2	5	-----	
3	1		
4	-5		
7	1		
-----	████████		

L2(5) =

Set the screen
size : {Window}

```
WINDOW
Xmin=-10
Xmax=10
Xscl=1
Ymin=-10
Ymax=10
Yscl=1
Xres=█
```

Now {Graph}



To do another problem, we need
to clear out the first one

{Stat}
Press 4

```

CALC TESTS
1:Edit...
2:SortA(
3:SortD(
4:ClrList
5:SetUpEditor
  
```

Then press $\boxed{2nd} \boxed{1} \Rightarrow L1$
then \boxed{Enter}

Do the same
for L2

```
ClrList L1      Done
ClrList L2      Done
```

When you are
done with all
the exercises
turn off {StatPlot}

```
Plot1 Plot2 Plot3
On Off Off
Type: [ ] [ ] [ ]
      [ ] [ ] [ ]
Xlist: L1
Ylist: L2
Mark: [ ] [ ] [ ]
```