Graph Work

1   a   Draw a graph of $y = 3x - 7$ for values of x of $-3 \leq x \leq 3$.
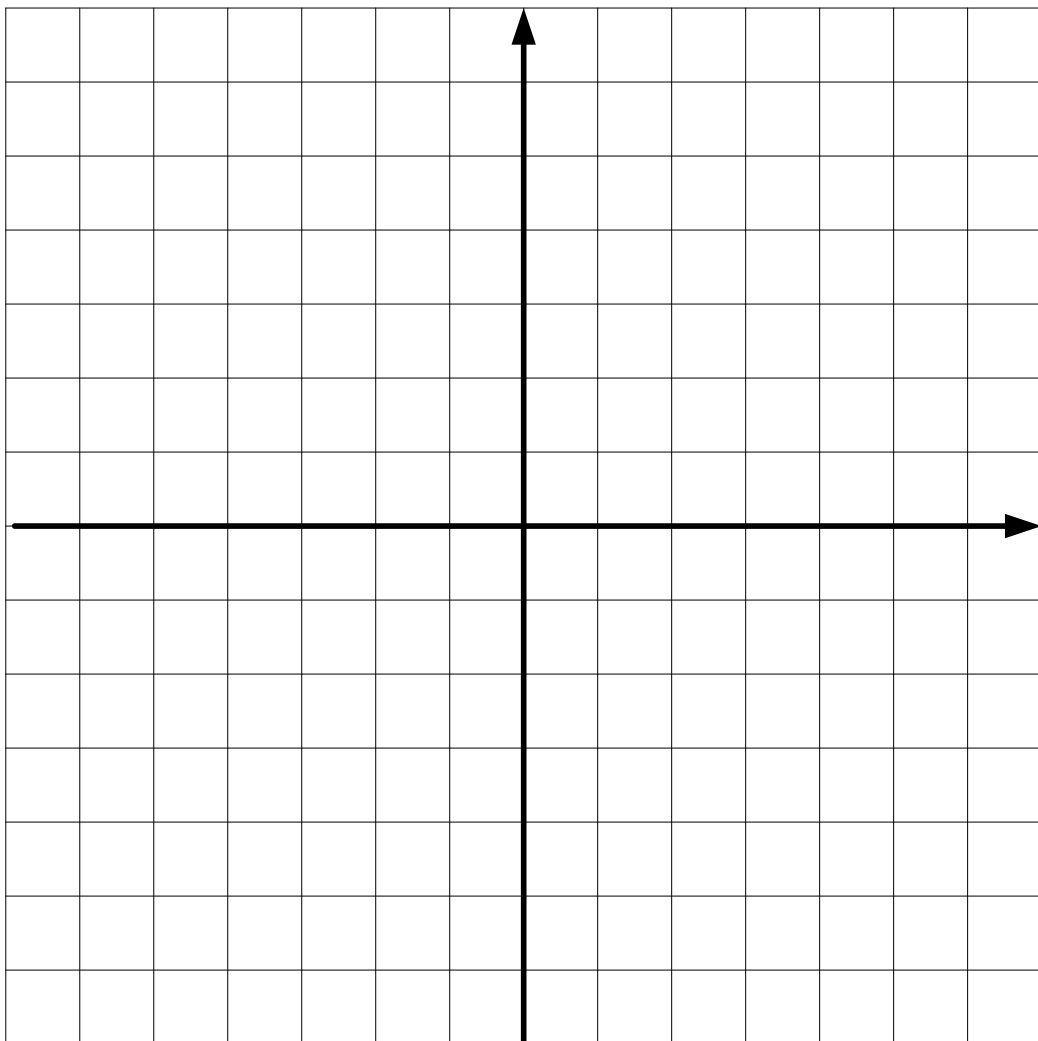
b   Give the co-ordinates of the y intercept.

c   Write the equation of a line that is parallel to the line, $y = 3x - 7$.

d   What is the gradient of the line $y = 3x - 7$?

2   a   Draw a graph of $y = 5 - x$ for values of x of $-5 \leq x \leq -1$.
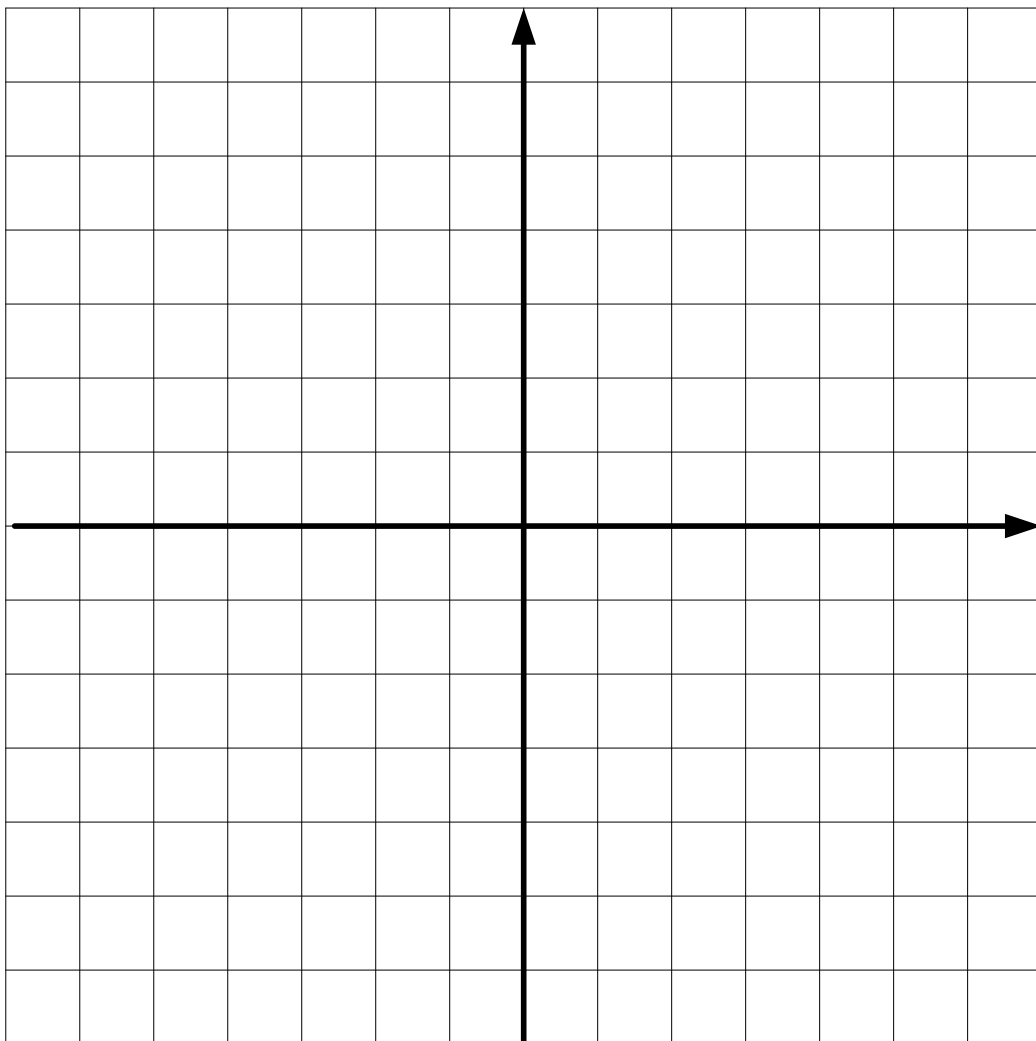
b   Give the co-ordinates of the y intercept.

c   Write the equation of a line that is parallel to the line, $y = 5 - x$.
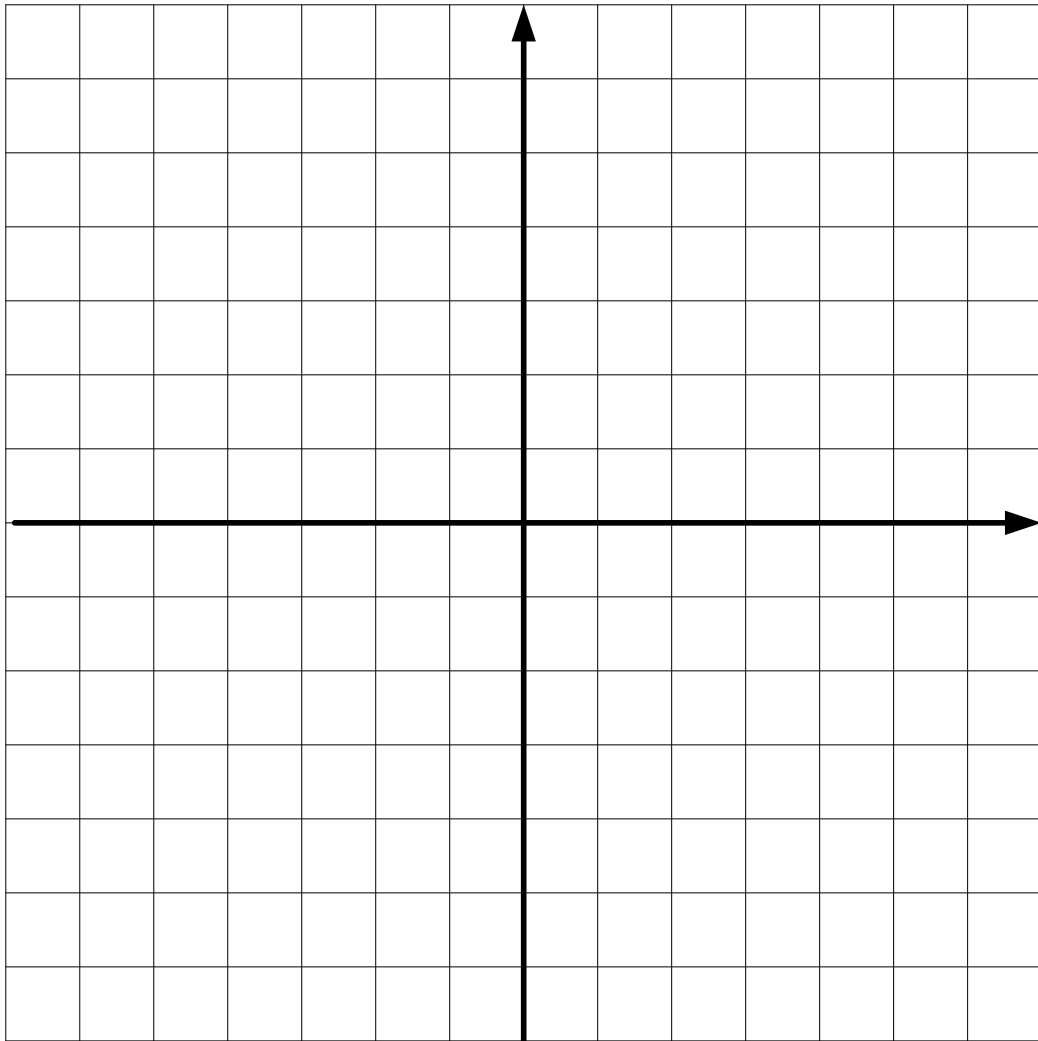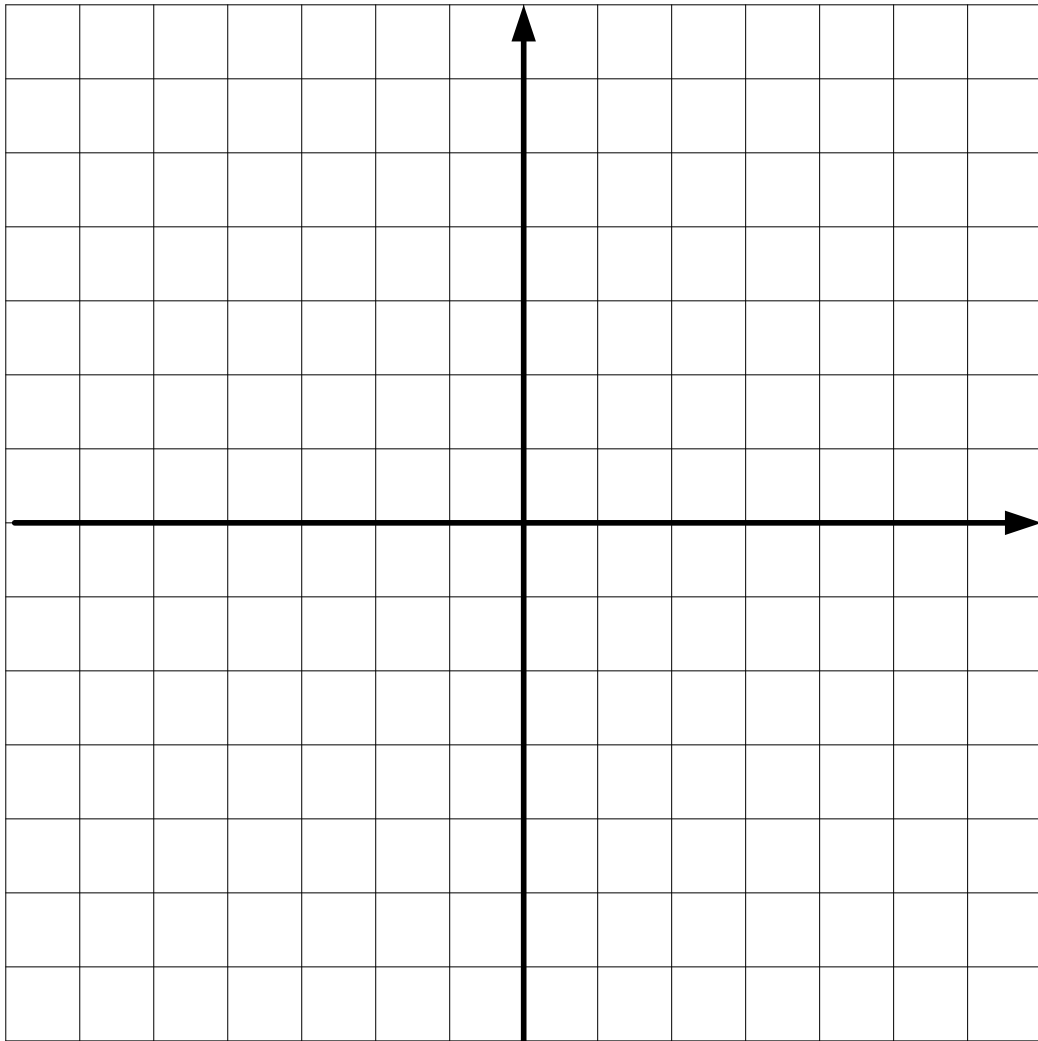
d   What is the gradient of the line $y = 5 - x$?

3   a   Draw a graph of $y = x^2 - 4$ for values of x of $-4 \leq x \leq -4$.

b   Give the co-ordinates of the y intercept.

c.   What is the name of the shape of this graph?

4   a   Draw a graph of $y = x^3 - 1$ for values of x of $-2 \leq x \leq 2$.

b   Give the co-ordinates of the y intercept.

5   a   Draw a graph of $y = 12 - 2x$ for values of x of $-3 \leq x \leq 2$.
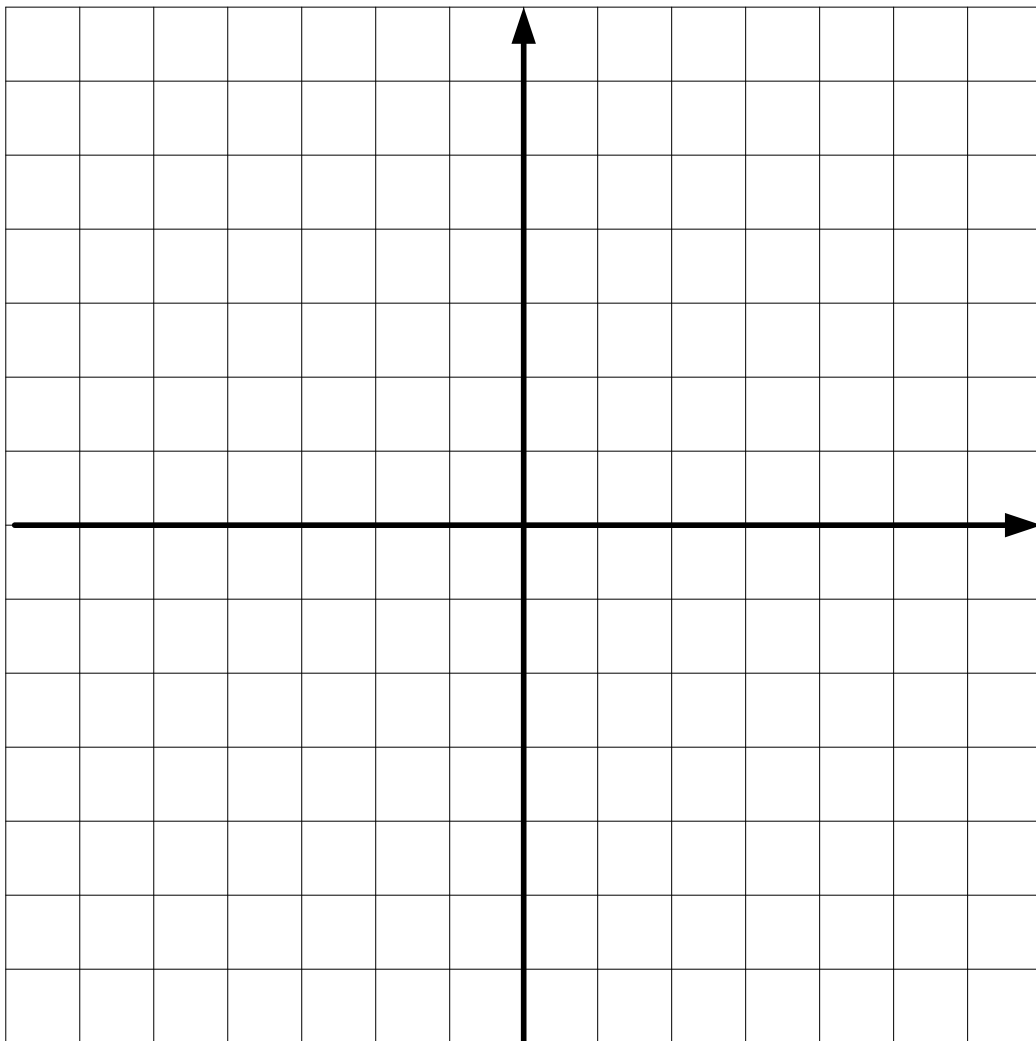
b   Give the co-ordinates of the y intercept.

c   Write the equation of a line that is parallel to the line, $y = 12 - 2x$.

d   What is the gradient of the line $y = 12 - 2x$?

6   a   Draw a graph of $y = 16 - x^2$ for values of x of $-4 \leq x \leq 2$.
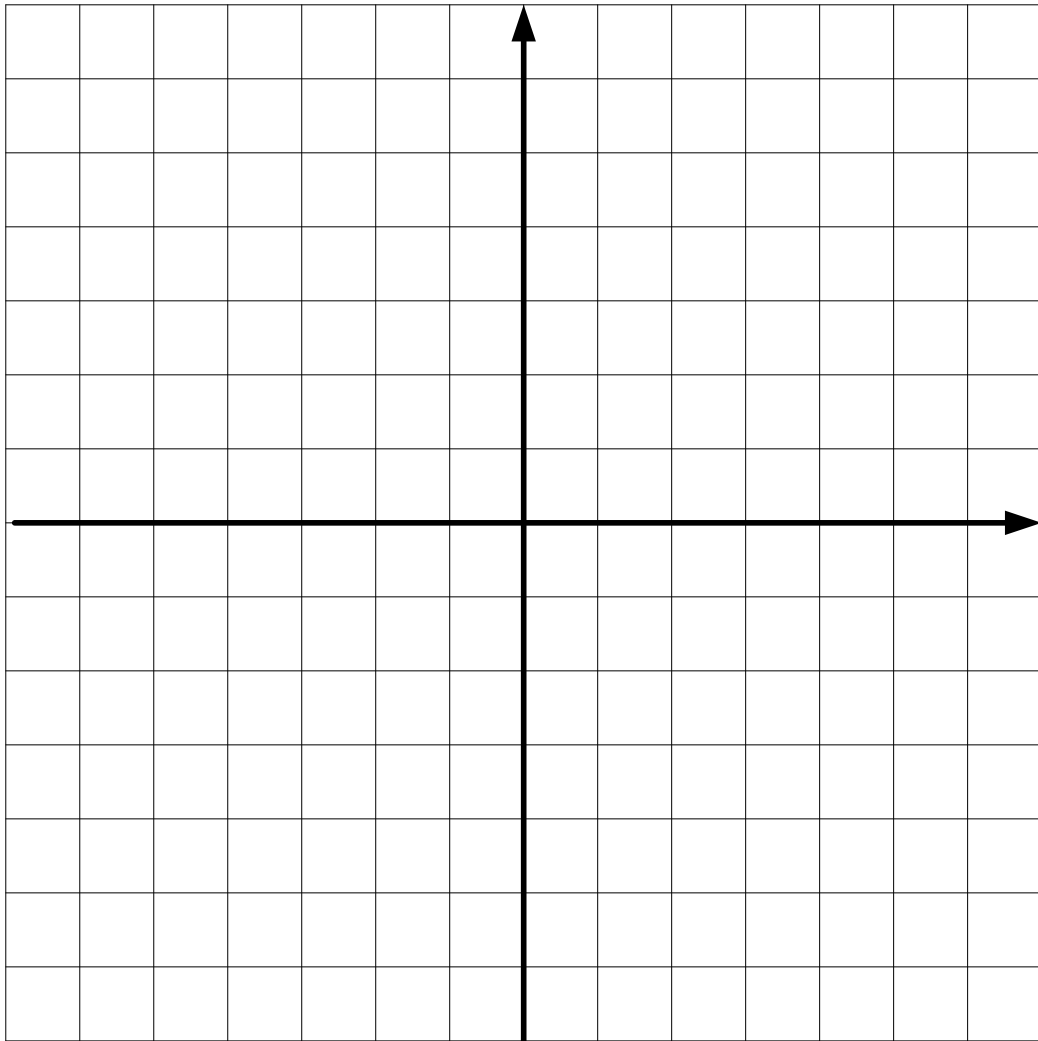
b   Give the co-ordinates of the y intercept.

c   What is the name of the shape of this graph?

d   What are the co-ordinates of the turning point in this graph?

Graphs investigation

1   Explore on www.geogebra.org

          Find out what happens to the graphs if you increase the highest index by 1, 2, 3, … , 20

          Here, you need to type in y=x^0 and look at the graph. Then type in y=x^1 and look at the graph. How does it change? Then continue the pattern typing x^n where n is a number that you keep increasing by 1 each time.

2   Write a description of the shapes of the graphs and explain what happens.
3   Can you spot any pattern?

4   Can you figure out what happens if you put in an equation of the form $ax^2 + bx + c$

          For each of the following ideas, change the value of a, b or c individually so that you can see the effect of each change. Try at least three different changes for each number.

5   What happens as you change the value of a?
6   What happens if you change the value of b?
7   What happens if you change the value of c?

8   Using the line segment tool, see if you can draw two lines that are perpendicular to each other. Look at the equations for each line and see if you can work out the relationship between the two lines.