



Sketching Graphs of Modulus Functions

One feature of the graphs of modulus functions is that there will be ‘turning point(s)’. This is known as vertex / vertices.

When a sketch is required, the question should be attempted on writing paper, not on the graph paper. A sketch is only a representation of the graph.

The sketch may be useful to solve the subsequent part-question(s).

During assessments, a range will be given. Ranges are not given in the example questions, as the graphs are plotted using Computer Software.

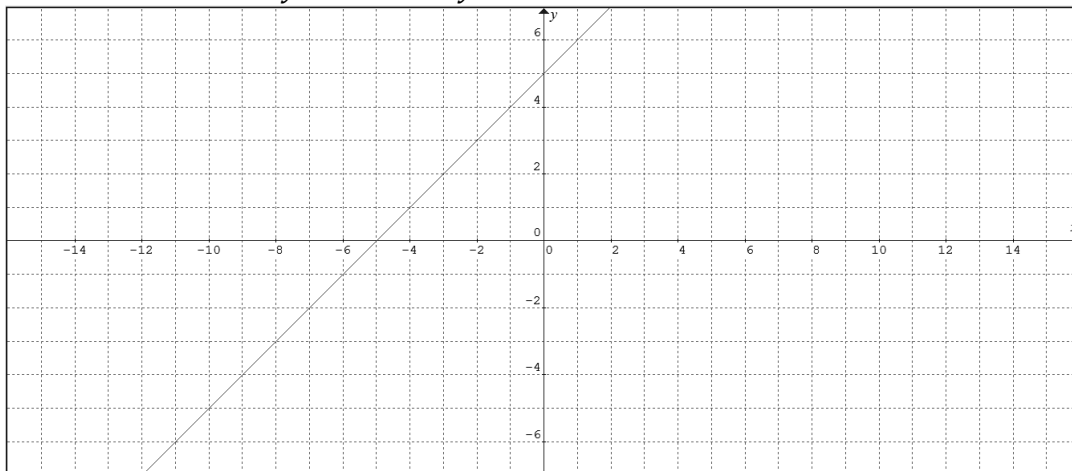
After the sketch, check the coordinates again by the use of calculator.

A sketch must be done using a pencil.

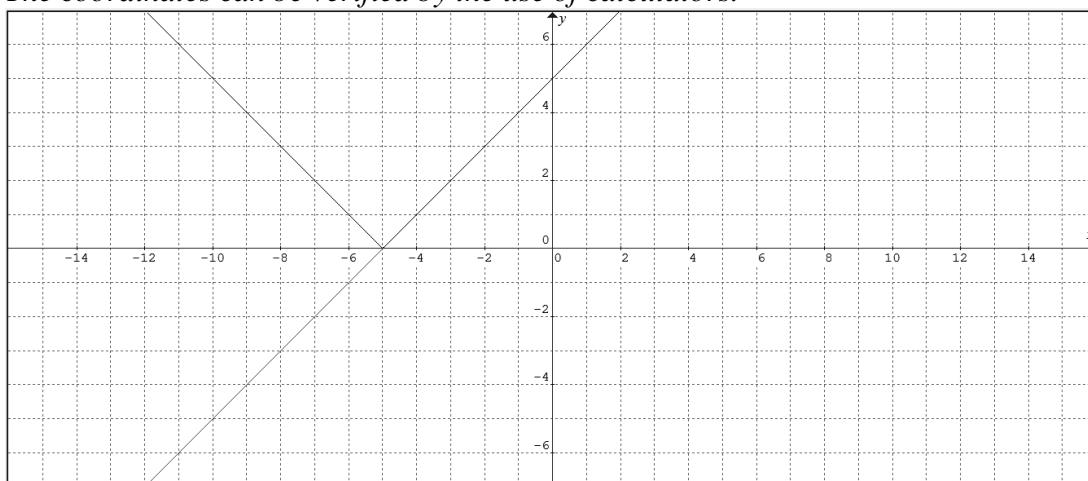
Sketching Graphs of Modulus Linear Functions

Example: Sketch the graph of $y = |x + 5|$.

1. Sketch the graph of $y = x + 5$, as shown below. The graph will have a gradient of 1 and will intersect the y -intercept at $y = 5$.



2. 'Reflect' the section below $y = 0$ up.
*Take note that the section below $y = 0$ must be drawn in dotted lines.
The coordinates can be verified by the use of calculators.*



In the presentation of answer, the following need to be shown:

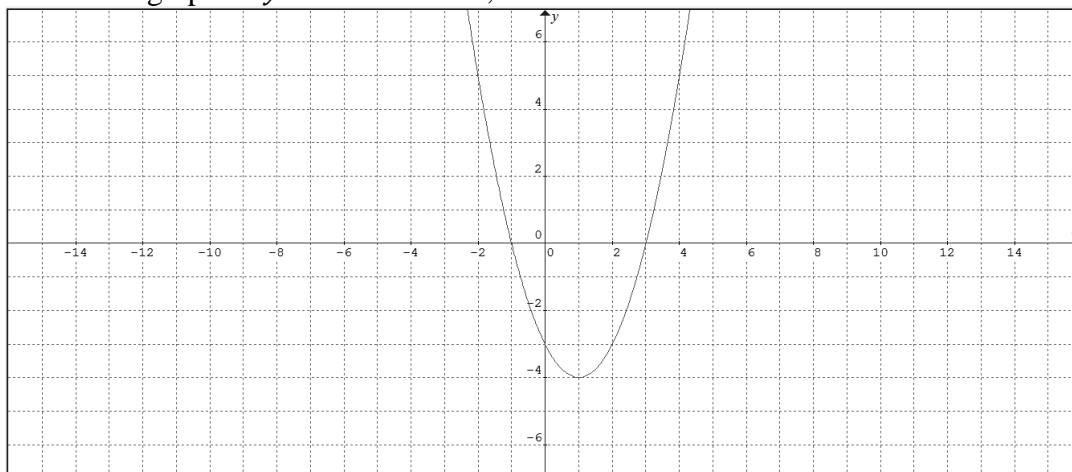
1. *The shape of the graph*
2. *The turning point (vertex)*
3. *y-intercept*
4. *Axes must be drawn.*
5. *Label the graph.*

Extension: Suggest how a graph of $y + 3 = |x + 5|$ can be plotted.

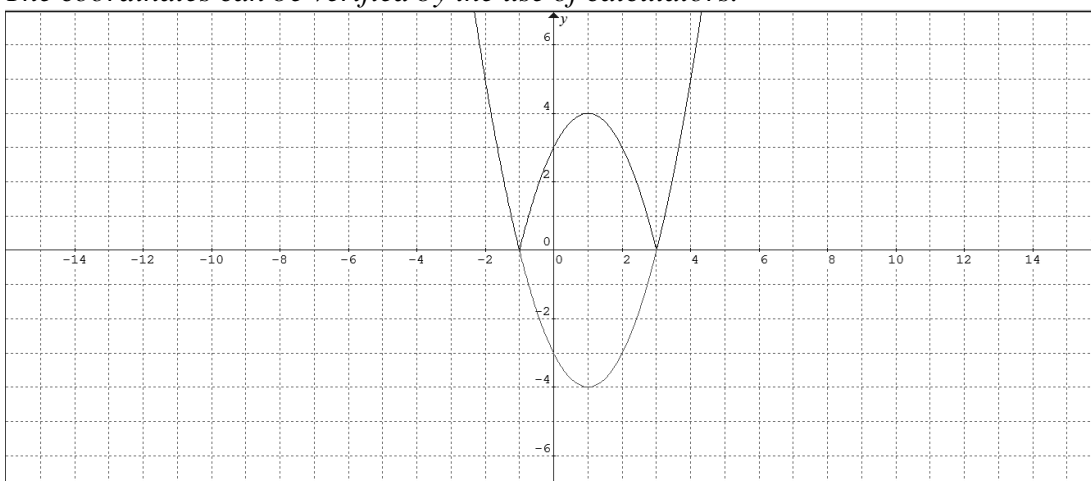
Sketching Graphs of Modulus Quadratic Functions

Example: Sketch the graph of $y = |x^2 - 2x - 3|$.

1. Sketch the graph of $y = x^2 - 2x - 3$, as shown below.



2. 'Reflect' the section below $y = 0$ up.
*Take note that the section below $y = 0$ must be drawn in dotted lines.
The coordinates can be verified by the use of calculators.*



In the presentation of answer, the following need to be shown:

- 1. The shape of the graph*
- 2. The vertices*
- 3. The turning point*
- 4. y-intercept*
- 5. Axes must be drawn.*
- 6. Label the graph.*

Extension: Suggest how a graph of $y = |x^2 - 2x - 3| + 4$ can be plotted.

END