

Sketching graphs

IB Studies/SL/HL

This worksheet is to help you use your GDC correctly and to sketch graphs, giving all the appropriate information onto a sketch.

When drawing a sketch all the following points must be included:

- The correct window must be used to show enough information for both axis'
- the axis must be correctly labeled
- any points of intersection (where the graph cuts the x -axis or the y -axis) must be clearly labeled
- any asymptotes (lines the graph goes toward, but never reaches) must be shown and labeled
- remember the graph is a **sketch**, not an accurate drawing so graph paper does not need to be used.

Sketch the following functions, and answer the questions related to the graph. Your GDC (depending on model) can be used to get the answers to some of the questions.

- Sketch $f(x) = x^2 - x - 6$, $-4 \leq x \leq 5$.
 - Write down the coordinates of the y -intercept.
 - Write down the coordinates of the x -intercepts.
 - Write down the vertex of the graph (vertex=corner point, or a turning, in this case the bottom of the graph).
- Sketch $f(x) = (x + 4)(1 - x)$, $-6 \leq x \leq 3$.
 - Write down the coordinates of the y -intercept.
 - Write down the coordinates of the x -intercepts.
 - Write down the vertex of the graph.
- Sketch $f(x) = (x + 4)(x - 1)(x + 1)$, $-6 \leq x \leq 3$
 - Write down the coordinates of the y -intercept.
 - Write down the coordinates of the x -intercepts.
- Sketch $f(x) = \frac{1}{x + 1} + 2$
 - Write down the coordinates of the y -intercept.
 - Write down the coordinates of the x -intercept.
 - Give the equation of the vertical asymptote.
 - Give the equation of the horizontal asymptote.
 - State a number that x cannot be.

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5. a) Sketch $f(x) = \sin x$, $0 \leq x \leq 360$
[Make sure your calculator is in degrees]
b) Copy and complete the statement for your graph:
..... $\leq y \leq$
- c) Write down the coordinates where the graph intersects the x -axis.
6. a) Sketch $f(x) = \cos x$, $0 \leq x \leq 360$
[Make sure your calculator is in degrees]
b) Copy and complete the statement for your graph:
..... $\leq y \leq$
- d) Write down the coordinates where the graph intersects the x -axis.
7. a) Sketch $y = e^x$, $x = \text{any real number}$
b) Give a range of numbers that y cannot be.
c) Write down the equation of the horizontal asymptote.
d) Write down the coordinate of the y -intercept.
8. a) Sketch $\frac{3}{2x} - 4$.
b) Write down the coordinates of any intercepts.
c) Write down the equations of any asymptotes.
d) Give the only value that x cannot take.