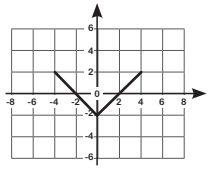
GCSE Higher Plus Revision Mat (3)

1) The point $P(-4, 6)$ lies on the circumference of a circle with centre (1, -3). Find an equation of the tangent to the circle at point P.

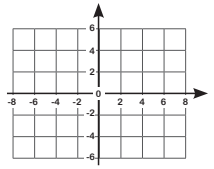
2)
a) Write $x^2 - 4x - 11$ in the form $(x - a)^2 - b$.

b) Hence, find the values of x that satisfy $x^2 - 4x - 11 < 0$, giving your answers in surd form.

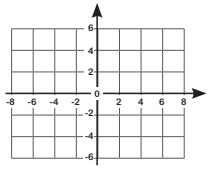
3) The graph of $y = f(x)$ is drawn on the grid.



a) Draw the graph of $y = f(x) - 2$



b) Draw the graph of $y = -f(x)$



4) Anne and Nadine both have identical bags of counters. Both bags contain 5 green counters and n yellow counters. Anne takes a random counter form her bag and puts in Nadine's bag. Nadine then selects a counter from her bag. The probability that Nadine selects a green counter is $\frac{5}{8}$.

Find the probability that Nadine selects a yellow counter given that Anne selected a yellow counter.

5) Solve this pair of simultaneous equations:

$x^2 + y^2 = 5$

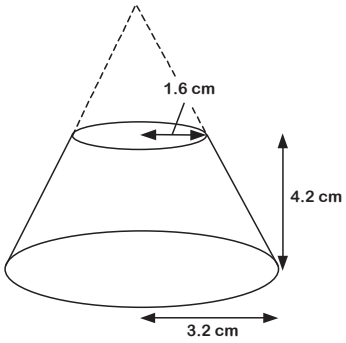
$y = 3x - 1$

6) Complete the table of values for $y = 2^x$.

x	-2	-1	0	1	2	3	4
y							

7) Simplify $\dfrac{4}{1 + \sqrt{7}}$

8) Calculate the volume of the frustum of the cone shown below.



9) In the diagram ABCD is a kite.
Prove that triangles ABC and ADC are congruent.