

GCSE Higher Plus Revision Mat (3) ANSWERS



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 .

$$y = \frac{5}{9}x + \frac{74}{9}$$

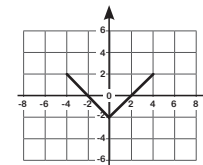
2) a) Write $x^2 - 4x - 11$ in the form $(x - a)^2 - b$.

$$(x - 2)^2 - 15$$

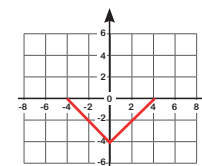
b) Hence, find the values of x that satisfy $x^2 - 4x - 11 < 0$, giving your answers in surd form.

$$2 - \sqrt{15} < x < 2 + \sqrt{15}$$

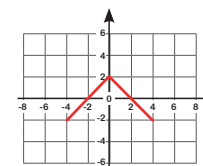
3) The graph of $y = f(x)$ is drawn on the grid.



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 from her bag and puts it 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.

$$\frac{4}{9}$$

5) Solve this pair of simultaneous equations:

$$\begin{aligned} x^2 + y^2 &= 5 \\ y &= 3x - 1 \end{aligned}$$

$$x = -\frac{2}{5} \quad y = -\frac{11}{5}$$

$$x = 1 \quad y = 2$$

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

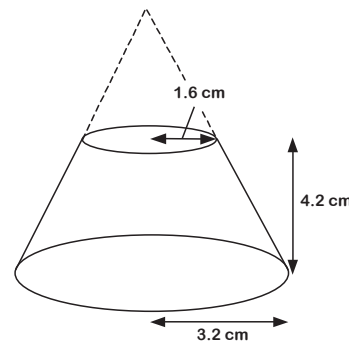
x	-2	-1	0	1	2	3	4
y	0.25	0.5	1	2	4	8	16

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

$$\frac{-2 + 2\sqrt{7}}{3}$$

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

$$78.82 \text{ cm}^3$$



9) In the diagram ABCD is a kite.

Prove that triangles ABC and ADC are congruent.

$$\angle ABC = \angle ADC$$

AC is common

Triangles congruent by SSS or SAS

$$\therefore AB = AD \text{ and } BC = DC$$

