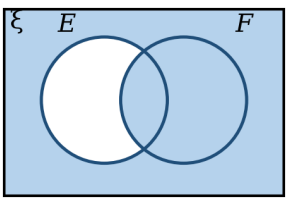
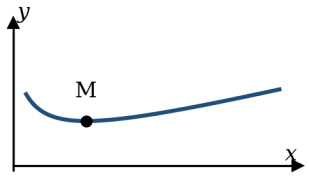
Day 69	IGCSE 10-a-day
1 $y = -6x^3 - \frac{5}{x^2}$ Find $\frac{dy}{dx}$.	
2 A machine was bought for £14,500. Each year its value decreases by the same percentage. After 3 years it is worth £4,973.50. Work out the percentage decrease each year.	
3 Solve the simultaneous equations $y = x^2 + 4x + 4$ $y = -x$	
4 $f(x) = x^2 - 8$ Use differentiation to find the coordinates of the turning point of the graph of $y = f(x)$. State whether it is a maximum or a minimum.	
5 Write down the set notation for the region shaded in the Venn diagram. 	

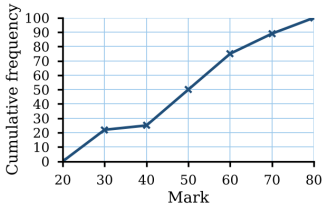
Day 69 **IGCSE 10-a-day**

6 The diagram shows a sketch of the curve $y = 3x + \frac{48}{x}$ for $x > 0$.
The curve has a minimum point at M.
Find the coordinates of M, justifying that it is a minimum.



7 Show that $(3 \sin \theta + 2 \cos \theta)^2 + (2 \sin \theta - 3 \cos \theta)^2 \equiv 13$.

8 The cumulative frequency graph gives information about the marks of 100 students in a test.
(a) Find an estimate for the median and the interquartile range.
(b) Estimate how many of the 100 had a mark greater than 25.



9 A circle has equation $x^2 + y^2 = 841$.
The point P(−20, 21) lies on the circle.
(a) Find the equation of the tangent to the circle at P. Give your answer in the form $ax + by = c$, where a, b and c are integers.
(b) The tangent meets the x-axis at the point T.
Write down the coordinates of T.

10 The area of a square is 148 cm^2, correct to the nearest cm^2.
Work out the upper bound of the side length of the square.
Give your answer correct to 3 significant figures. (Calculator)