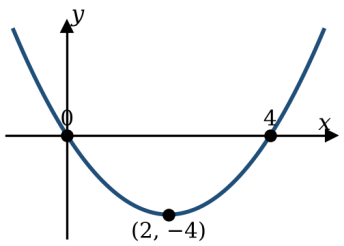
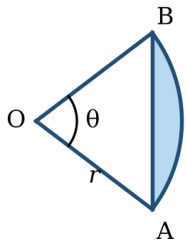
Day 98	A Level Maths: B Tier 10-a-day
1 P(A) = 0.6, P(B) = 0.4, P(A ∩ B) = 0.09. Find (a) P(A ∪ B), (b) P(A | B). (c) Are A and B independent?	
2 A car moves in a straight line with constant acceleration. Its initial speed is 11 m s^{-1}, its final speed is 21.5 m s^{-1} and the motion lasts 7 s. Find the distance travelled.	
3 Find the exact value of $\int_0^{\frac{\pi}{2}} \cos^2 x \, dx$.	
4 A circle has centre (3, 1) and passes through the point (5, 5). Find an equation of the circle.	
5 A ball is thrown horizontally at 27 m s^{-1} from the top of a cliff 19.6 m above level ground. Take g = 9.8 m s^{-2}. Find the time of flight and the horizontal distance from the base where it lands.	

Day 98	A Level Maths: B Tier 10-a-day

6 The diagram shows the curve y = f(x), a quadratic.
(a) Find the coordinates of the local maximum point of y = |f(x)|.
(b) How many solutions has |f(x)| = 6?



7 The shaded region is the segment cut off by the chord AB of a circle with centre O and radius 4 cm. Angle AOB = 1.8 radians.
Find the area of the segment, to 3 s.f.



8 Given that each component fails independently with probability 0.25, find the least number of components needed for the probability of at least one success to exceed 0.999.

9 Differentiate y = 5 tan 3x with respect to x,
and find the exact gradient when $x = \frac{\pi}{9}$.

10 A geometric series has first term 5 and common ratio 3.
Find the smallest value of n for which the sum of the first n terms exceeds 10000.