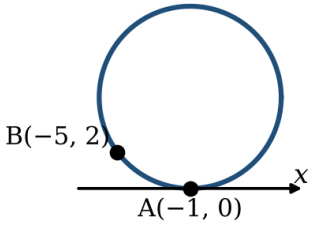
Day 22	A Level Maths: A Tier 10-a-day
1 $X \sim N(62, 10^2)$. Find $P(X > 84 \mid X > 69)$ to 3 significant figures.	
2 The diagram shows a circle that touches the x-axis at A(−1, 0) and passes through B(−5, 2). Find the equation of the circle.  	
3 For a sample of 22 pairs of values of time spent on social media and exam score, r = 0.292. The critical value for a one-tailed test at the 5% level is 0.3598. Test, at this level, whether there is positive correlation between the two variables.	
4 A 4 kg particle is in equilibrium on a rough plane inclined at α, $\tan\alpha = \frac{4}{3}$, μ = 0.25. A horizontal force of P N, in the vertical plane through a line of greatest slope, pushes it towards the plane. Find the least and greatest values of P. Take g = 9.8.	
5 The line y = x + 2 meets the curve $y = x^2 + 2$ at A and B. (a) Find the coordinates of A and B. (b) Find the exact length AB.	

Day 22	A Level Maths: A Tier 10-a-day
6 $y = \cot(3x)$. Find $\frac{dy}{dx}$ and its exact value at $x = \frac{\pi}{9}$.	
7 A particle is projected at 12.6 m s^{-1} up a line of greatest slope of a rough plane inclined at α, where $\tan\alpha = \frac{12}{5}$. The coefficient of friction is 0.6. Find (a) the greatest distance it moves up the plane, (b) its speed on returning to the start. Take g = 9.8. Give answers to 3 s.f. if not exact.	
8 A curve has equation $3x^2y + y^3 + 4x = 40$. Find $\frac{dy}{dx}$ in terms of x and y, and the gradient of the normal at (2, 2).	
9 The second term of a geometric series is 12 and its sum to infinity is 54. Find the two possible values of the first term.	
10 Solve $2\sec^2\theta - 10\tan\theta + 10 = 0$ for $0° \leq \theta \leq 360°$. Give answers to 1 d.p.	