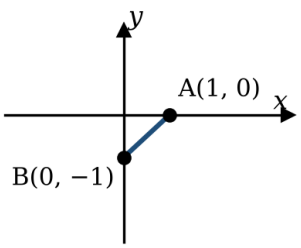
Day 50	A Level Maths: C Tier 10-a-day
1 A circle has equation $x^2 + y^2 - 6x - 10y - 30 = 0$. Find the centre and the radius of the circle.	
2 A circular ripple has radius r cm, increasing at 0.5 cm/s. Find the rate at which the area is increasing when r = 3, in terms of π.	
3 X ~ B(25, 0.4). Find E(X) and Var(X).	
4 A body moves in a straight line. Its displacement from O at time t seconds is s metres, where $s = 2t^3 + t^2 - 5t + 2$. Find its velocity when t = 4.	
5 The diagram shows a line meeting the axes at A and B. Find (a) the equation of AB in the form px + qy = r with integers p, q and r, (b) the length AB. 	

Day 50	A Level Maths: C Tier 10-a-day
6 A rope pulls a box with a force of 16 N at an angle of 30° above the horizontal. Find the horizontal and vertical components of the force, to 3 s.f.	
7 (a) Show that $x^3 - 4x - 3 = 0$ can be rearranged to $x = (4x + 3)^{\frac{1}{3}}$. (b) Use x_{n+1} = this formula with $x_0 = 2$ to find x_1, x_2 to 3 d.p.	
8 A population is $N(\mu, 5^2)$. H_0: $\mu = 170$, H_1: $\mu > 170$. A sample of 36 has mean $\bar{x} = 172.25$. Test at the 5% level. Critical value: $z = 1.645$.	
9 Use a double angle formula to find $\int \cos^2 3x \, dx$.	
10 The diagram shows the curve $y = f(x)$, where $f(x)$ is a cubic. Find $f(x)$ in the form $k(x - a)(x - b)(x - c)$. 