Day 250 **IGCSE 10-a-day**

1 $f(x) = -3x - 7$ and $g(x) = x^2 - 1$

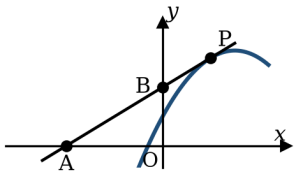
(a) Find $gf(x)$. Give your answer in the form $ax^2 + bx + c$.

(b) Solve $gf(x) = 255$

2 The diagram shows the curve $y = -x^2 + 3x + 1$ and the tangent at P(1, 3), meeting the axes at A and B.

(a) Find an equation of the tangent at P.

(b) Work out the area of triangle OAB.



3 Rationalise the denominator of $\frac{11}{3\sqrt{7}}$

Give your answer in its simplest form.

4 The graph of $y = -2x^2 + 4x + 6$ has a turning point at P.

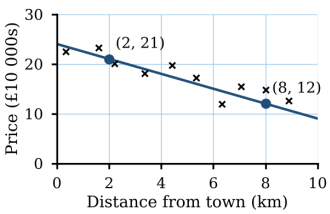
Find the equation of the tangent to the curve at P.

5 The scatter graph shows distance from town (x) and price (y).

The equation of the line of best fit is $y = -1.5x + 24$.

(a) Estimate y when x = 3.

(b) Explain why an estimate of y when x = 20 may be unreliable.



Day 250	IGCSE 10-a-day
6 A geometric sequence has term 3 equal to 1 and term 6 equal to $-\frac{1}{8}$. Find the common ratio and the first term.	
7 A circle has equation $x^2 + y^2 = 125$. The point P$(-10, -5)$ lies on the circle. Find an 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.	
8 The graph of $y = f(x)$ has a minimum point at $(-1, 4)$. Write down the coordinates of the turning point of the graph of (a) $y = f(x + 4)$ (b) $y = f(-x) + 1$	
9 The tangent to the curve $y = 3x^2 + 2x + 3$ at the point where $x = -3$ meets the axes at A and B. Work out the area of triangle OAB, where O is the origin.	
10 p = 13.5 and r = 5.1, each correct to 1 decimal place. q = 1.58, correct to 2 decimal places. Work out the lower bound of $\frac{p - q}{r}$. Give your answer correct to 3 significant figures. (Calculator)	