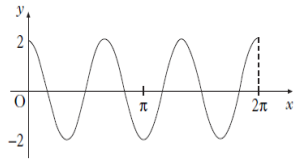
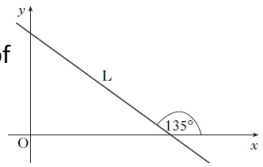
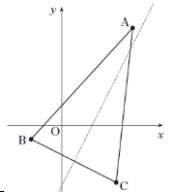
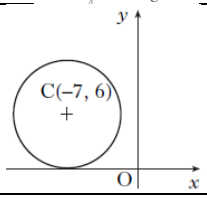
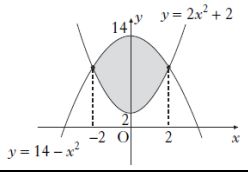
200 Exam Questions & Answers

1	Show that $(x-1)$ is a factor of $f(x)=2x^3+x^2-8x+5$. Hence fully factorise $f(x)$ fully.	
2	Express x^2+8x+3 in the form $(x+p)^2+q$ and state the coordinates of the turning point of the parabola.	
3	Evaluate: $log_5 2 + log_5 50 - log_5 4$	
4	What is the solution of the equation $2sinx-\sqrt{3}=0$ where $\frac{\pi}{2} \leq x \leq \pi$?	
5	Given that $0 \leq a \leq \frac{\pi}{2}$ and $sina=\frac{3}{5}$, find an expression for $\sin(x+a)$.	
6	If $=4x^3+5x^2-3x+2$, find $\frac{dy}{dx}$.	
7	Find the coordinates of the turning points of the curve with equation $y=x^3-3x^2-9x+12$ and determine their nature.	
8	Find $\int(2x^{-4}+cos5x)\,dx$.	
9	$\frac{dy}{dx}=8x-3$. If $y=7$ when $x=2$, find an equation for *y*.	
10	The expression $\sqrt{3}sinx°-cosx°$ can be written in the form $ksin(x-a)°$, where $k>0$ and $0 \leq a < 360$. Calculate the values of *k* and a.	

11 A function f is given by $f(x) = \sqrt{9 - x^2}$. What is a suitable domain of f?	
12 The diagram shows the graph with equation of the form $y = acosbx$ for $0 \leq x \leq 2\pi$. What is the equation of this graph? 	
13 $E(-2,-1,4), P(1,5,7) and\ F(7,17,13)$ are three collinear points. P lies between E and F. What is the ratio in which P divides EF?	
14 Vectors $\boldsymbol{p}$ and $\boldsymbol{q}$ are such that $\lvert\boldsymbol{p}\rvert = 3$, $\lvert\boldsymbol{q}\rvert = 4$ and $\boldsymbol{p}.\boldsymbol{q} = 10$. Find the value of $\boldsymbol{q}.(\boldsymbol{p} + \boldsymbol{q})$.	
15 Write down the exact values of $sin60°$ and $tan\frac{\pi}{6}$.	
16 The diagram shows a line L; the angle between L and the positive direction of the *x*-axis is $135°$, as shown. What is the gradient of the line L? 	
17 The vertices of triangle ABC are $A(7,9), B(-3,-1)$ and $C(5,-5)$ as shown in the diagram. Find the equation of the median from C. 	
18 The x-axis is a tangent to a circle with centre $(-7,6)$ as shown in the diagram. What is the equation of the circle? 	
19 A sequence is defined by the recurrence relation $u_{n+1} = 0.3u_n + 6$ with $u_{10} = 10$ What is the value of u_{12}?	
20 The diagram shows graphs with equations $y = 14 - x^2$ and $y = 2x^2 + 2$. Calculate the shaded area.