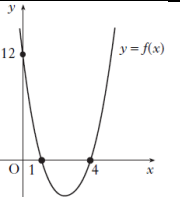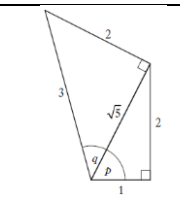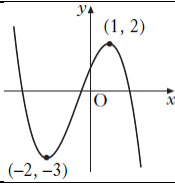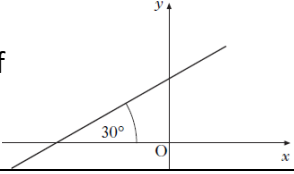**41** The graph has an equation of the form $y = k(x - a)(x - b)$. What is the equation of the graph?

42

For what values of x is $6 + x - x^2 < 0$?

43

Express $log_a 25 + log_a 4 - log_a 20$ as the logarithm of a single number.

44

Solve $cos2x - 3cosx + 2 = 0$ for $0 \le x < 360$.

45 The diagram shows two right-angled triangles with sides and angles given. What is the value of $sin(p + q)$?

46

What is the derivative of $(x^3 + 4)^2$?

47 The point $P(5, 12)$ lies on the curve with equation $y = x^2 - 4x + 7$. Find the equation of the tangent to the curve.

48 Find $\int 4 \sin(2x + 3) \, dx$.

49 Find $\int_{-2}^{2}(x + 1)^2 \, dx$.

50 Write $2sinx° + 3cosx°$ in the form $ksin(x - a)$, for $k > 0$ and $0 \le a \le 360$.

51 Functions f and g are defined on a suitable domain by $f(x) = cosx$ and $g(x) = x + \frac{\pi}{6}$. What is the value of $f\left(g\left(\frac{\pi}{6}\right)\right)$?	
52 The diagram shows the graph of $y = f(x)$. Sketch $y = f(x + 2) - 1$	
53 Given that $\boldsymbol{u} = \begin{pmatrix} 2 \\ 0 \\ 1 \end{pmatrix}$ and $\boldsymbol{v} = \begin{pmatrix} -1 \\ 2 \\ 4 \end{pmatrix}$, find $3\boldsymbol{u} - 2\boldsymbol{v}$ in component form.	
54 The vectors $x\boldsymbol{i} + 5\boldsymbol{j} + 7\boldsymbol{k}$ and $-3\boldsymbol{i} + 2\boldsymbol{j} - \boldsymbol{k}$ are perpendicular. What is the value of x?	
55 Prove that $2cos^2 A + 3sin^2 A - 2 = sin^2 A$.	
56 A line makes an angle of 30° with the positive direction of the x-axis as shown. What is the gradient of the line?	
57 Find the equation of the perpendicular bisector of the line joining $P(3, -3)$ to $Q(-1, 9)$.	
58 Write down the centre and calculate the radius of the circle with equation $$x^2 + y^2 + 8x + 4y - 38 = 0$$	
59 A sequence is defined by the recurrence relation $$u_{n+1} = 2u_n + 3 \text{ and } u_0 = 1.$$ What is the value of u_3?	
60 Calculate the shaded area enclosed by the line $y = 2x - 3$ and the curve $y = x^2 - 5x - 3$.	