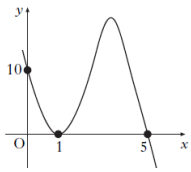
81

The diagram shows the graph with equation $y = k(x-1)^2(x+t)$.
What are the values of *k* and *t*?



82

What is the solution of $x^2 + 4x > 0$, where *x* is a real number?

83

Find x if $log_x 6 - 2log_x 4 = 1$.

84

Solve the equation $sin2x - cosx = 0$ in the interval $0 \leq x \leq 180$.

85

If *a* and *b* are acute angles such that $sina = \frac{4}{5}$ and $sinb = \frac{5}{13}$, find the value of $\sin(a+b)$.

86

If $f(x) = \frac{1}{\sqrt[5]{x}}$, $x \neq 0$, what is $f'(x)$?

87 Find the equation of the tangent to the curve with equation $y = x^3 + 2x^2 - 3x + 2$ at the point where $x = 1$.

88

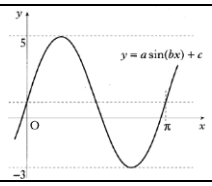
Find $\int (2x-1)^{\frac{1}{2}}\, dx$ where $x > \frac{1}{2}$.

89

Find $\int_0^1 \frac{dx}{(3x+1)^{\frac{1}{2}}}$

89

Express $3cosx° + 5sinx°$ in the form $kcos(x - a°)$ where *k*>0 and $0 \leq a \leq 90$.

91 The functions f and g are defined by $f(x) = x^2 + 1$ and $g(x) = 3x - 4$, on the set of real numbers. Find $f\big(g(x)\big)$ and $g\big(f(x)\big)$.	
92 The diagram shows a sketch of a trig function whose equation is of the form $y = a\sin(bx) + c$. Determine the values of a, b and c. 	
93 Show that the points $A(-7, -8, 1)$, $T(3, 2, 5)$ and $B(18, 17, 11)$ are collinear. Find the ratio in which T divides AB.	
94 P,Q and R have coordinates $(1, 3, -1)$, $(2, 0, 1)$ and $(-3, 1, 2)$ respectively. Express the vectors $\overrightarrow{QP}$ and $\overrightarrow{QR}$ in component form. Hence or otherwise find the size of angle PQR.	
95 Find the exact value TAN $\frac{7\pi}{4}$	
96 Find the equation of the line which passes through the point (-1, 3) and is perpendicular to the line with equation $4x + y - 1 = 0$.	
97 A triangle has vertices A(-3, 1), B(4, 3) and C(6, -5). Find the equation of the altitude BP.	
98 A circle C_1 has equation $x^2 + y^2 + 2x + 4y - 27 = 0$. Write down the centre and calculate the radius of C_1.	
99 A sequence is generated by the recurrence relation $u_{n+1} = \frac{1}{4}u_n + 7$, with $u_0 = -2$. What is the limit of this sequence as $n \to \infty$?	
100 Calculate the shaded area shown in the diagram.