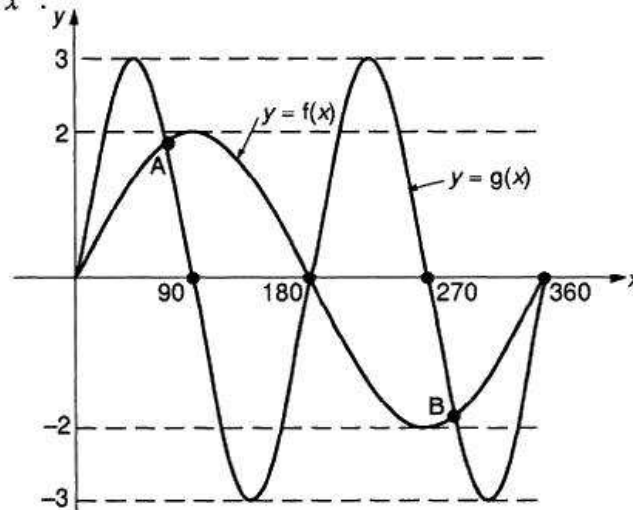
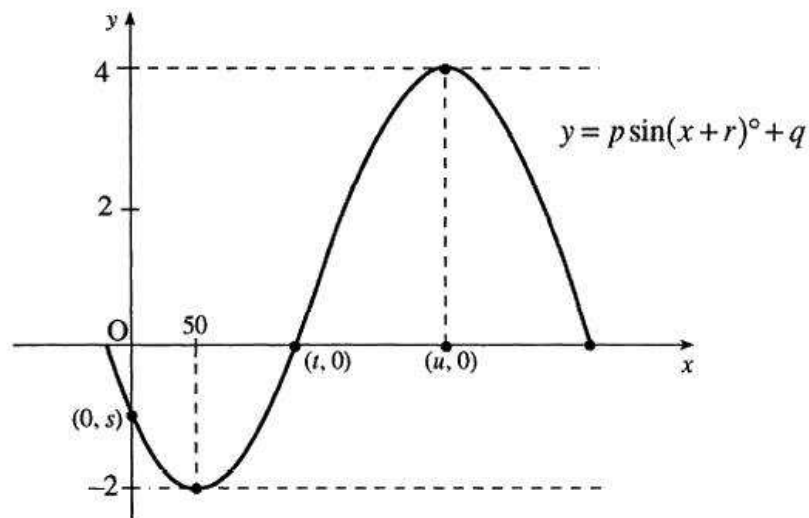


Trigonometry Calculator C Grade

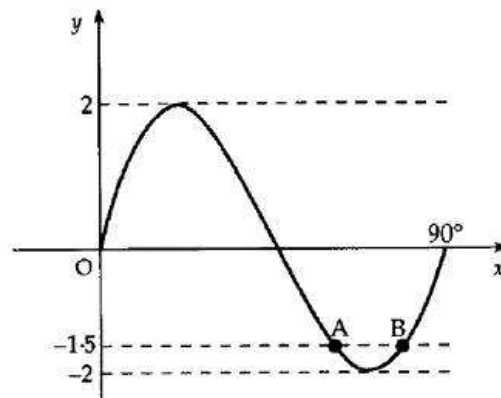
- [SQA] 1. (a) Solve the equation $3\sin 2x^\circ = 2\sin x^\circ$ for $0 \leq x \leq 360$ (4)
- (b) The diagram below shows parts of the graphs of sine functions f and g . State expressions for $f(x)$ and $g(x)$. (1)
- (c) Use your answers to part (a) to find the co-ordinates of A and B. (2)
- (d) Hence state the values of x in the interval $0 \leq x \leq 360$ for which $3\sin 2x^\circ < 2\sin x^\circ$. (3)



- [SQA] 2. The sketch represents part of the graph of a trigonometric function of the form $y = p \sin(x+r)^\circ + q$. It crosses the axes at $(0, s)$ and $(t, 0)$, and has turning points at $(50, -2)$ and $(u, 4)$.
- (i) Write down values for p , q , r and u . (4)
- (ii) Find the values for s and t . (4)



- [SQA] 3. The diagram shows the graph of a sine function from 0° to 90° .
- (a) State the equation of the graph.
- (b) The line with equation $y = -1.5$ intersects the curve at A and B.
- Find the coordinates of A and B.



- [SQA] 4. Solve the equation $\cos 2x^\circ + 5 \cos x^\circ - 2 = 0$, $0 \leq x < 360$. 2
5. Solve $2 \cos 2x - 5 \cos x - 4 = 0$ for $0 \leq x < 2\pi$. 3
- [SQA] 6. Express $8 \cos x^\circ - 6 \sin x^\circ$ in the form $k \cos(x^\circ + a^\circ)$ where $k > 0$ and $0 < a < 360$. 5
7. (a) $12 \cos x^\circ - 5 \sin x^\circ$ can be expressed in the form $k \cos(x + a)^\circ$, where $k > 0$ and $0 \leq a < 360$.
Calculate the values of k and a . 4
- (b) (i) Hence state the maximum and minimum values of $12 \cos x^\circ - 5 \sin x^\circ$.
(ii) Determine the values of x , in the interval $0 \leq x < 360$, at which these maximum and minimum values occur. 3
- [SQA] 8. (a) Express $3 \sin x^\circ - \cos x^\circ$ in the form $k \sin(x - \alpha)^\circ$, where $k > 0$ and $0 \leq \alpha \leq 90$. (4)
- (b) Hence find algebraically the values of x between 0 and 180 for which $3 \sin x^\circ - \cos x^\circ = \sqrt{5}$. (4)
- (c) Find the range of values of x between 0 and 180 for which $3 \sin x^\circ - \cos x^\circ \leq \sqrt{5}$. (2)
- [SQA] 9. $f(x) = 2 \cos x^\circ + 3 \sin x^\circ$.
- (a) Express $f(x)$ in the form $k \cos(x - \alpha)^\circ$ where $k > 0$ and $0 \leq \alpha < 360$. (4)
- (b) Hence solve algebraically $f(x) = 0.5$ for $0 \leq x < 360$. (3)

10. Given that $f(x) = (4 - 3x^2)^{-\frac{1}{2}}$ on a suitable domain, find $f'(x)$.

A. $-3x(4 - 3x^2)^{-\frac{1}{2}}$

B. $-\frac{1}{2}(4 - 6x)^{-\frac{3}{2}}$

C. $2(4 - 3x^3)^{\frac{1}{2}}$

D. $3x(4 - 3x^2)^{-\frac{3}{2}}$

2

[SQA] 11. Given that $f(x) = (5x - 4)^{\frac{1}{2}}$, evaluate $f'(4)$.

3

[SQA] 12. Differentiate $2x^{\frac{3}{2}} + \sin^2 x$ with respect to x .

4

[SQA] 13. Find the derivative, with respect to x , of $\frac{1}{x^3} + \cos 3x$.

4

[SQA] 14. If $f(x) = \cos^2 x - \frac{2}{3x^2}$, find $f'(x)$.

4

[SQA] 15. Differentiate $4\sqrt{x} + 3 \cos 2x$ with respect to x .

4

[END OF QUESTIONS]