Question 11

Select the option which is the sinusoidal function of period $2\pi/\omega$ whose phasor is $2e^{2\pi i/3}$.

Options

A	$-\sqrt{3}\cos\omega t - \sin\omega t$	B	$-\sqrt{3}\cos\omega t + \sin\omega t$
C	$-\cos\omega t - \sqrt{3}\sin\omega t$	D	$-\cos\omega t + \sqrt{3}\sin\omega t$
E	$\cos\omega t - \sqrt{3}\sin\omega t$	F	$\cos\omega t + \sqrt{3}\sin\omega t$
G	$\sqrt{3}\cos\omega t - \sin\omega t$	H	$\sqrt{3}\cos\omega t + \sin\omega t$

Question 12

Choose the option which is an expression for the general solution of the recurrence relation

$$u_{r+1} = -2\sqrt{3}\,u_r - 4u_{r-1}.$$

Options

A	$u_n = 2^n\left(A\cos\frac{1}{6}n\pi + B\sin\frac{1}{6}n\pi\right)$	B	$u_n = 2^n\left(A\cos\frac{1}{3}n\pi + B\sin\frac{1}{3}n\pi\right)$
C	$u_n = 2^n\left(A\cos\frac{2}{3}n\pi + B\sin\frac{2}{3}n\pi\right)$	D	$u_n = 2^n\left(A\cos\frac{5}{6}n\pi + B\sin\frac{5}{6}n\pi\right)$
E	$u_n = 4^n\left(A\cos\frac{1}{6}n\pi + B\sin\frac{1}{6}n\pi\right)$	F	$u_n = 4^n\left(A\cos\frac{1}{3}n\pi + B\sin\frac{1}{3}n\pi\right)$
G	$u_n = 4^n\left(A\cos\frac{2}{3}n\pi + B\sin\frac{2}{3}n\pi\right)$	H	$u_n = 4^n\left(A\cos\frac{5}{6}n\pi + B\sin\frac{5}{6}n\pi\right)$

Unit 6

Questions 13 to 16

For each of the following differential equations, select the option which gives an expression for its general solution.

13	$\frac{d^2y}{dx^2} - 6\frac{dy}{dx} + 9y = 0$	
14	$\frac{d^2y}{dx^2} + 9y = 0$	
15	$\frac{d^2y}{dx^2} - 9y = 0$	
16	$\frac{d^2y}{dx^2} + 3\frac{dy}{dx} = 0$	

Options for Questions 13 to 16

A	$y = Ae^{-3x}$	B	$y = Ae^{3x}$
C	$y = A + Be^{-3x}$	D	$y = A + Be^{3x}$
E	$y = Ae^{-3x} + Be^{3x}$	F	$y = Ae^{-3x} + Bxe^{-3x}$
G	$y = Ae^{3x} + Bxe^{3x}$	H	$y = A\cos 3x + B\sin 3x$