<table>
<tr><td></td><td>BCM SCHOOL BASANT AVENUE FUGRI ROAD LUDHIANA
ASSIGNMENT OF CLASS XISC</td><td></td></tr>
<tr><td>1</td><td>The value of tan 1° tan 2° tan 3° … tan 89° is
(a) 0 (b) 1 (c) ½ (d) Not defined
Ans b</td><td>1</td></tr>
<tr><td>2</td><td>The value of $\frac{1-\tan^2 15^\circ}{1+\tan^2 15^\circ}$ is
(a) 1 (b) $\sqrt{3}$ (c) $\frac{\sqrt{3}}{2}$ (d) 2
Ans c</td><td>1</td></tr>
<tr><td>3</td><td>The value of tan 75° – cot 75° is equal to
$\tan 75^\circ - \cot 75^\circ$
$\Rightarrow$ Now, $\tan 75^\circ = \tan(45^\circ + 30^\circ)$
$= \frac{\tan 45^\circ + \tan 30^\circ}{1 - \tan 45^\circ \tan 30^\circ} \left[\because \tan(A+B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}\right]$
$= \frac{1 + \frac{1}{\sqrt{3}}}{1 - \frac{1}{\sqrt{3}}}$
$\Rightarrow \tan 75^\circ = \frac{\sqrt{3}+1}{\sqrt{3}-1}$ $\cot 75^\circ = \frac{1}{\tan 75^\circ} = \frac{\sqrt{3}-1}{\sqrt{3}+1}$
So, $\tan 75^\circ - \cot 75^\circ = \frac{\sqrt{3}+1}{\sqrt{3}-1} - \frac{\sqrt{3}-1}{\sqrt{3}+1}$
$= \frac{(\sqrt{3}+1)^2 - (\sqrt{3}-1)^2}{(\sqrt{3}-1)(\sqrt{3}+1)}$
$= \frac{3+1+2\sqrt{3}-3-1+2\sqrt{3}}{3-1}$
$= \frac{4\sqrt{3}}{2} = 2\sqrt{3}$
OR
Find the angle between the minute hand and hour hand of a clock when the time is 7:20.</td><td>2</td></tr>
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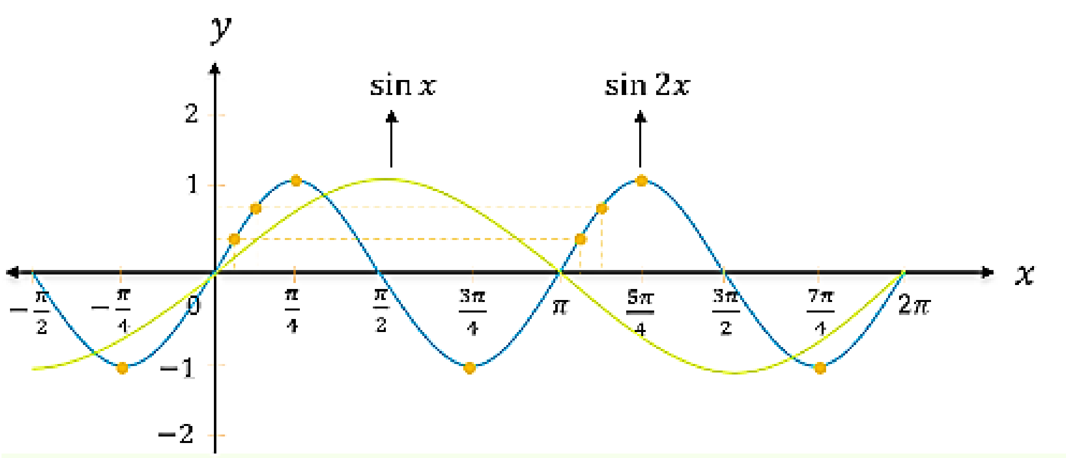
	The correct option is **C** 100° 7 hr 20 min = $7 + \frac{20}{60} = \frac{22}{3}$ hr Angle traced by hour hand in 7 hr 20 min = $\left(\frac{22}{3} \times \frac{360}{12}\right)^\circ = 220^\circ$ Angle traced by the minute hand in 20 min = $\left(\frac{360}{60} \times 20\right)^\circ = 120^\circ$ Hence, required angle between the two hands = $220^\circ - 120^\circ$ = 10(	
4	The value of sin 50° − sin 70° + sin 10° is equal to $\sin A - \sin B = 2\cos\frac{A+B}{2}\sin\frac{A-B}{2}$ $\sin 50^\circ - \sin 70^\circ = 2\cos\frac{50^\circ + 70^\circ}{2}\sin\frac{50^\circ - 70^\circ}{2} = -\sin 10^\circ$ $\therefore -\sin 10^\circ + \sin 10^\circ = 0$	**2**
5	Prove that the value of sin 20° sin 40° sin 60° sin 80° = $\frac{3}{16}$ sin 20 × sin 40 × sin60 × sin80 = sin60 [sin20 × sin40 × sin80] = √3/2[sin20 × sin(60 – 20) × sin(60 + 20)] = √3/2[sin 3(20)/4] = √3/2[sin 60/4] = √3/2[√3/2 × 4] = √3/2 × √3/8 = 3/16	**2**
6	Prove that $\left(1+\cos\frac{\pi}{8}\right)\left(1+\cos\frac{3\pi}{8}\right)\left(1+\cos\frac{5\pi}{8}\right)\left(1+\cos\frac{7\pi}{8}\right) = \frac{1}{8}$	**3**

	$\therefore$ L.H.S. = $\left(1+\cos\frac{\pi}{8}\right)\left(1+\cos\frac{3\pi}{8}\right)\cdot\left(1-\cos\frac{3\pi}{8}\right)\left(1-\cos\frac{\pi}{8}\right)$ ...[From (i) and (ii) = $\left(1-\cos^2\frac{\pi}{8}\right)\left(1-\cos^2\frac{3\pi}{8}\right)$ = $\sin^2\frac{\pi}{8}\sin^2\frac{3\pi}{8}$ = $\frac{1}{4}\left(2\sin\frac{\pi}{8}\sin\frac{3\pi}{8}\right)^2$ = $\frac{1}{4}\left[\cos\left(\frac{\pi}{8}-\frac{3\pi}{8}\right)-\cos\left(\frac{\pi}{8}+\frac{3\pi}{8}\right)\right]^2$ = $\frac{1}{4}\left[\cos\left(-\frac{\pi}{4}\right)-\cos\left(\frac{\pi}{2}\right)\right]^2$ = $\frac{1}{4}\left(\cos\left(\frac{\pi}{4}\right)-0\right)^2$ = $\frac{1}{4}\left(\frac{1}{\sqrt{2}}\right)^2$ $=\frac{1}{4}\left(\frac{1}{2}\right)$ $=\frac{1}{8}$	
7	Sketch the graph of $y=\sin x\ \ and\ \ \sin 2x$ on the same scale  	**4**