

**King Fahd University of Petroleum and Minerals**  
**Faculty of Science – Per-Year Math Program**  
**Math 002 - Term 032**  
**Recitation hour (6.3 & 6.4)**

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**Question1**

If  $\csc x = -\frac{25}{24}$ , where  $\frac{3\pi}{2} < x < 2\pi$ , then find  $\tan 2x, \cos \frac{x}{2}$ .

**Question2**

Find the exact value of

a)  $\sin 112.5^\circ \cos 112.5^\circ$

b)  $\sin \frac{5\pi}{12}$

**Question3**

Verify the following identities

a)  $\sin 2x - \tan x = \tan x \cos 2x$

b)  $\sin^2 \frac{x}{2} (1 + \sec x)^2 = \cos^2 \frac{x}{2} \tan^2 x$

**Question4**

Given the function  $f(x) = \sqrt{3} \sin 2x - \cos 2x$

a) Rewrite  $f(x)$  in the form  $f(x) = k \sin(2x + \alpha)$

b) Find the amplitude, the phase shift, the period, and the range of the graph of  $f(x)$ .