

King Fahd University of Petroleum and Minerals

Prep-Year Math Program

Math 002 - Term 132

Recitation (7.3)

Question 1 $\frac{1 - \tan \frac{13\pi}{9} \tan \frac{2\pi}{9}}{\tan \frac{13\pi}{9} - \tan \frac{2\pi}{9}} =$

- A) $-\frac{\sqrt{3}}{3}$ B) $\cot \frac{11\pi}{9}$ C) $-\cot \frac{11\pi}{9}$ D) $-\tan \frac{11\pi}{9}$ E) $\sqrt{3}$

Answer: (A): $-\frac{\sqrt{3}}{3}$

Question 2:

Given $\sec \alpha = -\frac{13}{12}$, α in quadrant II, and $\sin \beta = \frac{3}{5}$, where β is in quadrant II, find

- (i): $\tan(\alpha + \beta)$ (ii): $\sec \left[\frac{\pi}{2} - \alpha - \beta \right]$

Answer: (i): $-\frac{56}{33}$ **(ii):** $-\frac{65}{56}$

Question 3: Find the value of : $\sin(210^\circ + x) - \cos(120^\circ + x)$ for any angle x .

Answer: 0

Question 4: Simplify, for k integer

(a): $\sin(\theta + 2k\pi)$ (b): $\sin(\theta + (2k + 1)\pi)$ (c): $\sin \left[\frac{(2k + 1)}{2} \pi \right]$

Answer: (a): $\sin \theta$ **(b):** $-\sin \theta$ **(c):** $(-1)^k = \pm 1$

Question 5 Find the exact value of the following expressions:

a) $\sin(195^\circ)$

b) $\sin 13^\circ \sin 73^\circ + \sin 77^\circ \sin 17^\circ$

c) $\frac{1 + \tan 50^\circ \tan 185^\circ}{\tan 50^\circ - \tan 185^\circ}$

Answer: (a): $\frac{-\sqrt{6} + \sqrt{2}}{4}$ **(b):** $\frac{1}{2}$ **(c):** 1