King Fahd University of Petroleum and Minerals

Prep-Year Math Program

Math 002 - Term 132

Recitation (7.1)

Question 1:

a) Find the exact value of $\sin 44° + \cos 134° + \sin(-510°)$.

b) If $\sec x = -\frac{13}{12}$, find all possible values of $\frac{\sin x + \cos x}{\sec x}$

Answer (a): $-\frac{1}{2}$

Answer (b): $\frac{84}{169}$ or $\frac{204}{169}$

Question 2:

(i): If $\tan\theta = 2.6$, then $\tan(-\theta) =$

(ii): If $\cos\theta = -.65$, then $\cos(-\theta) =$

(iii): If $\cos\theta = .8$ and $\sin\theta = .6$, then $\tan(-\theta) =$

(iv): If $\sin\theta = \frac{2}{3}$, then $-\sin(-\theta) =$

(v): If $\cos\theta = -\frac{1}{5}$, then $-\cos(-\theta) =$

Answer: (i): -2.6 **(ii):** $-.65$ **(iii):** $-\frac{4}{3}$ **(iv):** $\frac{2}{3}$ **(v):** $\frac{1}{5}$

Question3 Write $\csc t$ in terms of $\tan t$, where $\pi < t < \frac{3\pi}{2}$.

Solution:

$$\csc^2 t = 1 + \cot^2 t$$

$$\csc t = -\sqrt{1+\cot^2 t}$$

$$= -\sqrt{1+\frac{1}{\tan^2 t}}$$

$$= -\sqrt{\frac{\tan^2 t + 1}{\tan^2 t}}$$

$$= -\frac{\sqrt{\tan^2 t + 1}}{\sqrt{\tan^2 t}}$$

$$= -\frac{\sqrt{\tan^2 t + 1}}{|\tan t|}$$

$$= -\frac{\sqrt{\tan^2 t + 1}}{\tan t}$$ (because $\tan t$ is positive for t in Quadrant III)

Answer: $-\frac{\sqrt{\tan^2 t + 1}}{\tan t}$

Question 4:

Determine whether the function is even, odd, or neither.

A) $f(x)=\dfrac{\tan x-\sin x}{x\sec x}$ B) $f(x)=2x\cos x-x^2\csc x$ C) $h(x)=\dfrac{x\tan x-\cos x}{x-\sec x}$

Answer:

(A): f is even.
(B): f is odd.
(C): h is neither odd nor even.

Question 5:

If $\tan(-\theta)=\dfrac{1}{4}$ and $\sec\theta>0$, then $\sin\theta=$

A) $-\dfrac{\sqrt{17}}{17}$

B) $\dfrac{\sqrt{17}}{17}$

C) $\dfrac{4\sqrt{17}}{17}$

D) $-\dfrac{4\sqrt{17}}{17}$

E) $\dfrac{\sqrt{15}}{15}$