Sections 5.2, 5.3 and 5.4

I- Find the exact value of each expression

1) $6\cos\frac{3\pi}{4}+2\tan(-\frac{\pi}{3})$ **2)** $\sec(-\frac{\pi}{3})-\cot(-\frac{5\pi}{4})$ **3)** $\cos(-\pi)-\sin(-\frac{3\pi}{2})$ **4)** $2\cot(-\frac{\pi}{6})+\cos(-\frac{5\pi}{6})$

5) $\sin\frac{4\pi}{3}-2\tan\frac{11\pi}{6}$ **6)** $\cot\frac{5\pi}{4}+\sec(-\frac{11\pi}{6})$ **7)** $\csc(-\frac{2\pi}{3})+\cos(\frac{7\pi}{6})$ **8)** $\cot(-\frac{\pi}{2})-\sin(-\frac{7\pi}{2})$

9) $\frac{\sin 50^o}{\cos 40^o}+\frac{1}{\cot^2(-40^o)}$ **10)** $\sin 200^o \sec(-70^o)$ **11)** $\cot 200^o \cot(-70^o)$ **12)** $\frac{\tan^2 20^o \sin 70^o}{\sec 20^o}$

13) $1+\tan^2 5^o-\csc^2 85^o$ **14)** $\tan 350^o \cot 10^o$ **15)** $\frac{1}{\cos 38^o \csc 52^o}-\csc 38^o \sec 52^o$

16) $\frac{\cos 40^o}{\sin(-320^o)}+\cot 140^o$ **17)** $\sec 35^o \csc 55^o-\tan 35^o \cot 55^o$ **18)** $\sin 160^o \cos 70^o-\cos 20^o \sin 290^o$

19) $\tan(-120^o)-\sin(-210^o)$ **20)** $4\csc(-\frac{5\pi}{3})-3\tan(-\frac{7\pi}{6})$ **21)** $\cot\frac{7\pi}{6}+\cos(-\frac{2\pi}{3})$ **22)** $3\cos\frac{5\pi}{6}-\cot\frac{\pi}{3}$

23) $\frac{\sin^2\frac{\pi}{6}-\cos\frac{\pi}{3}}{\cos\frac{\pi}{4}}$ **24)** $\frac{2(\sin^2\frac{\pi}{3})-\cos^2\frac{\pi}{4}}{\tan\frac{\pi}{3}}$ **25)** $\frac{2\sin\frac{4\pi}{3}-\tan\frac{11\pi}{6}}{2\cos(-\pi)-\sin(-\frac{3\pi}{2})}$ **26)** $\frac{\csc\frac{3\pi}{4}-\cot\frac{7\pi}{4}}{\sin(-\frac{\pi}{2})-\sec\frac{5\pi}{4}}$

II- Answer true or false

1) $\sin 270^o+\cos(-180^o)=0$ **2)** $\sin(-\pi)=-1$ **3)** $\tan(-\frac{3\pi}{2})$ is undefined **4)** $\cos(-360^o)-\sin(-90^o)=2$

5) $\cos(\frac{2\pi}{3})=\cos(-\frac{\pi}{3})$ **6)** $\sin(\frac{6\pi}{5})=\sin(-\frac{\pi}{5})$ **7)** $\tan(\frac{5\pi}{6})=\cot(-\frac{\pi}{3})$ **8)** $\csc(-\frac{7\pi}{6})=\sec(\frac{5\pi}{3})$

9) $\cos(-\frac{3\pi}{4})=\sin(\frac{7\pi}{4})$ **10)** $\cos(\frac{6\pi}{7})=\cos(-\frac{\pi}{7})$ **11)** $\tan(\frac{9\pi}{8})=\cot(\frac{\pi}{2}-\frac{\pi}{8})$ **12)** $\cot 270^o+\cos 0^o=0$

13) $\cot(-\pi)$ is undefined **14)** $\csc(-270^o)+\sec(-180^o)=0$ **15)** $\sec(\frac{\pi}{2})-\sin(\frac{3\pi}{2})=1$ **16)** $\sin(\pi-\frac{\pi}{9})=\sin(\frac{\pi}{9})$

17) $\tan(360^o-30^o)=-\tan 30^o$ **18)** $\cos(\frac{\pi}{4}-2\pi)=-\cos\frac{\pi}{4}$ **19)** $\sin(\frac{\pi}{5}-2\pi)=\sin\frac{\pi}{5}$ **20)** $\cos(-5\pi)=-1$

III- Find the exact values of each of the remaining Trig. functions given

1) $\sec\theta=-\frac{5}{4}$, $\tan\theta<0$ **2)** $\csc\theta=-4$, $\pi<\theta<\frac{3\pi}{2}$ **3)** $\sin\theta=-\frac{1}{3}$, $\cos\theta>0$

4) $\cot\theta=\frac{\sqrt{2}}{2}$, $\sec\theta<0$

IV- **1) If** $\sec\theta=3$, **find** **a)** $\cos\theta$, **b)** $\tan^2\theta$, **c)** $\csc(90^o-\theta)$, **d)** $\sin^2\theta$

2) If $\cot\theta=2$, **find** **a)** $\tan\theta$, **b)** $\csc^2\theta$, **c)** $\tan(90^o-\theta)$, **d)** $\sec^2\theta$

3) If $\sin\theta=0.3$ **, find** $\csc\theta+\cos(90^o-\theta)+\sin(360^o-\theta)$

4) If $\cos\theta=0.2$ **, find** $\cos(-\theta)+\cos(2\pi-\theta)+\cos(\pi+\theta)+\cos(3\pi-\theta)$

5) If $\cot\theta=-2$ **, find** $\cot(-\theta)+\cot(\theta-\pi)+\cot(2\pi-\theta)+\tan(\theta-\frac{\pi}{2})$

V- Evaluate the following :

1) $\tan^2(-\frac{11\pi}{6}) - \sin^2(-\frac{7\pi}{18}) - \sin^2(\frac{\pi}{9})$

2) $\csc^2(-\frac{5\pi}{3}) + \tan^2(\frac{5\pi}{18}) - \csc^2(-\frac{2\pi}{9})$

3) $\sec^2(-\frac{13\pi}{7}) - \tan^2(-\frac{8\pi}{7}) - \cot^2(-\frac{5\pi}{6})$

4) $\cos^2(-\frac{5\pi}{3}) - \csc^2(-\frac{5\pi}{4}) + \sin^2(-\frac{2\pi}{3})$

5) $\csc(\frac{11\pi}{6}) + \cos(-\frac{\pi}{4}) - \sec(-3\pi)$

6) $\tan(-\frac{5\pi}{6}) - \sec(-\frac{\pi}{6}) - \cos(-\frac{7\pi}{2})$

7) $\sec(-\frac{2\pi}{3}) + \cot(-\frac{\pi}{6}) - \sin(\frac{11\pi}{2})$

VI) Evaluate the following expressions using Trig. Identities, assuming that $0 < \theta <$

1) If $x = \frac{3}{2}\sin\theta$ **, find** $\frac{x}{\sqrt{9-4x^2}}$

2) If $x = a\sec\theta$ **, find** $\frac{\sqrt{x^2-a^2}}{x}$

3) If $x = \sqrt{2}\cot\theta$ **, find** $\frac{x}{\sqrt{2+x^2}}$

VII) **1) If** $p(x,-\frac{\sqrt{2}}{3})$ **is on the unit circle such that** $x>0$**, find** $\cot\theta$ **where** p **is on the terminal side of the angle of** θ **radians.**

2) If $p(-\frac{\sqrt{5}}{6},y)$ **is on the unit circle such that** $y<0$**, find** $\csc\theta$ **where** p **is on the terminal side of the angle of** θ **radians.**

3) If $\csc\theta=-\frac{2}{\sqrt{3}}$**, find all possible values for** θ **for** $0\le\theta<2\pi$

4) If $\tan\theta=\frac{1}{\sqrt{3}}$**, find all possible values for** θ **for** $0\le\theta<2\pi$

5) If $\cos\theta=0$**, find all possible values for** θ **for** $0\le\theta<2\pi$

6) If $\cot\theta$ **is undefined , find all possible values for** θ **for** $0\le\theta<2\pi$

7) If $\cos\theta=-\frac{1}{2}$**, find all possible values for** θ **for** $-2\pi\le\theta<-\pi$

8) If $\tan\theta=-\frac{1}{\sqrt{3}}$**, find all possible values for** θ **for** $-\frac{3\pi}{2}\le\theta<0$

9) If $\cot\theta=0$**, find all possible values for** θ **for** $-2\pi\le\theta<-\frac{\pi}{2}$

10)If $\csc\theta$ **is undefined, find all possible values for** θ **for** $-2\pi<\theta\le\frac{\pi}{2}$

11) Find the y coordinate of $p(x,y)$ **on the unit circle and on the terminal side of the angle** $-\frac{5\pi}{3}$

12) Find the x coordinate of $p(x,y)$ **on the unit circle and on the terminal side of the angle** $-\frac{5\pi}{6}$

13) Suppose that the terminal point determined by θ**, is the point** $(\frac{2}{\sqrt{29}},\frac{5}{\sqrt{29}})$ **on the unit circle. Find the terminal point determined by** $5\pi+\theta$**.**

14) Suppose that the terminal point determined by θ**, is the point** $(\frac{2}{\sqrt{29}},\frac{5}{\sqrt{29}})$ **on the unit circle. Find the terminal point determined by** $-\theta-7\pi$**.**

15) Suppose that the terminal point determined by $\pi - \theta$, is the point $(-\frac{3}{\sqrt{34}}, \frac{5}{\sqrt{34}})$ on the unit circle. Find the terminal point determined by $8\pi - \theta$.

16) If θ is an acute angle and the terminal side is determined by θ, then the terminal side determined by $3\pi - \theta$ will be in quadrant.

17) If θ is an acute angle and the terminal side is determined by θ, then the terminal side determined by $\frac{11\pi}{2} + \theta$ will be in quadrant.