1 TEAM MEMBER **ONE** ONLY

PSU Math Relays
Trig. - Team Event
April 4, 2017
NO CALCULATORS

TEAM MEMBER **ONE** ONLY **1**

Select the letter of the most appropriate answer and shade in the corresponding region on the answer sheet for that question. You may write on this test sheet but only the answer sheet will be graded. Choice "a.n.g." means that the correct answer is not given as a choice.

1). If $\sin(\theta)=\frac{\sqrt{3}}{2}$ *and* $\tan(\theta)<0,$ what does $\sec(\theta)$ equal?

A). $\frac{-\sqrt{3}}{4}$ **B).** $\frac{2\sqrt{3}}{3}$ **C).** 2 **D).** $-\sqrt{3}$ **E). a.n.g**

2). Simply $\cos(x)\cot(x)+\sin(x)$

A). $\csc(x)$ **B).** $2\sin(x)$ **C).** $\cos^2(x)$ **D).** $\sec(x)$ **E). a.n.g**

3). Evaluate $2\sin^2(15°)+2\sin^2(75°)$

A). 0 **B). 1** **C). 2** **D).** $4\sin^2(90°)$ **E). a.n.g**

4). Evaluate $\csc(120°)+\tan(210°)$

A) $\frac{2\sqrt{3}}{3}$ **B).** $\sqrt{3}$ **C).** $\frac{1}{2}$ **D).** $\frac{-\sqrt{3}}{3}$ **E). a.n.g**

5). Evaluate $\cos^2(15°)-\sin^2(15°)$

A). $\frac{\sqrt{3}}{2}$ **B). 0** **C). 1** **D).** $\frac{\sqrt{2}}{2}$ **E). a.n.g**

6). Evaluate $[\cos(30°)][\sin(60°)]$

A). $\frac{\sqrt{3}}{4}$ **B).** $\cot\left(\frac{1}{2}\right)$ **C).** $\frac{1}{4}$ **D).** $\frac{3}{4}$ **E). a.n.g**

7). Evaluate $\cos(75°)$

A). $\frac{\sqrt{6}}{2}$ **B).** $\frac{\sqrt{6}-\sqrt{2}}{4}$ **C).** $\frac{\sqrt{6}+\sqrt{2}}{4}$ **D).** $\frac{\sqrt{2}}{2}$ **E). a.n.g**

8). If $\tan^2 x=1$ what does $\sec^2 x$ equal?

A). $\frac{\sqrt{3}}{2}$ **B). 0** **C). 1** **D).** $\frac{\sqrt{2}}{2}$ **E). a.n.g**

2 TEAM MEMBER **TWO** ONLY

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TEAM MEMBER **TWO** ONLY 2

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9). If $\cos(\theta)=\frac{\sqrt{3}}{2}$ and $\tan(\theta)<0$, what does $\csc(\theta)$ equal?

A). $\frac{-\sqrt{3}}{4}$ **B).** $\frac{2\sqrt{3}}{3}$ **C).** 2 **D).** $-\sqrt{3}$ **E). a.n.g**

10). Simply $\cos(60°)\cot(45°)+\sin(30°)$

A). $\frac{\sqrt{6}}{2}$ **B).** $\frac{2+\sqrt{3}}{2}$ **C).** $\frac{\sqrt{3}+\sqrt{2}}{2}$ **D).** $\frac{\sqrt{3}+1}{2}$ **E). a.n.g**

11). Evaluate $\cos^2(37°)+\cos^2(53°)$

A). 0 **B). 1** **C). 2** **D).** $2\cos^2(90°)$ **E). a.n.g**

12). Evaluate $\sec(120°)+\tan(315°)$

A) 1 **B).** $\sqrt{3}$ **C).** $\frac{1}{2}$ **D).** -3 **E). a.n.g**

13). Evaluate $\cos^2(75°)-\sin^2(75°)$

A). $\frac{\sqrt{3}}{2}$ **B).** $\frac{-\sqrt{3}}{2}$ **C). 1** **D).** $\frac{\sqrt{2}}{2}$ **E). a.n.g**

14). Evaluate $[\sin(30°)][\cos(60°)]$

A). $\frac{\sqrt{3}}{4}$ **B).** $\tan\left(\frac{1}{2}\right)$ **C).** $\frac{1}{4}$ **D).** $\frac{3}{4}$ **E). a.n.g**

15). Evaluate $\sin(15°)$

A). $\frac{\sqrt{6}}{2}$ **B).** $\frac{\sqrt{6}-\sqrt{2}}{4}$ **C).** $\frac{\sqrt{6}+\sqrt{2}}{4}$ **D).** $\frac{\sqrt{2}}{2}$ **E). a.n.g**

16). $\cos^2(63°)+\sin^2(63°)$

A). -1 **B). 0** **C). 1** **D).** $\cot^2(63°)$ **E). a.n.g**

3 TEAM MEMBER **THREE** ONLY

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TEAM MEMBER **THREE** ONLY 3

Select the letter of the most appropriate answer and shade in the corresponding region on the answer sheet for that question. You may write on this test sheet but only the answer sheet will be graded. Choice "a.n.g." means that the correct answer is not given as a choice.

17). Find the exact value of $\sin\frac{3\pi}{4}$

A). 1 **B).** -1 **C).** $\frac{\sqrt{2}}{2}$ **D).** $\frac{-\sqrt{2}}{2}$ **E). a.n.g**

18). Simply $\cos\left(\frac{5\pi}{6}\right)\cot\left(\frac{\pi}{3}\right)+\sin\left(\frac{\pi}{2}\right)$

A). $\frac{3}{2}$ **B).** $\frac{-1}{2}$ **C).** $\frac{1}{2}$ **D).** $\frac{5}{2}$ **E). a.n.g**

19). Evaluate $\cos^2\left(\frac{\pi}{12}\right)+\cos^2\left(\frac{5\pi}{12}\right)$

A). 0 **B). 1** **C). 2** **D).** $\cos^2\left(\frac{\pi}{2}\right)$ **E). a.n.g**

20). Evaluate $\cos\left(\frac{2\pi}{3}\right)+\sin\left(\frac{5\pi}{6}\right)$

A) $\frac{\sqrt{3}+1}{2}$ **B).** $\frac{1-\sqrt{3}}{2}$ **C).** 1 **D).** $\frac{\sqrt{3}}{4}$ **E). a.n.g**

21). Evaluate $\cos^2\left(\frac{3\pi}{8}\right)-\sin^2\left(\frac{3\pi}{8}\right)$

A). $\frac{\sqrt{3}}{2}$ **B).** $\frac{-\sqrt{2}}{2}$ **C).** $\frac{-\sqrt{3}}{2}$ **D).** $\frac{\sqrt{2}}{2}$ **E). a.n.g**

22). Evaluate $2\sin\left(\frac{\pi}{12}\right)\cos\left(\frac{\pi}{12}\right)$

A). 1 **B).** $2\tan\left(\frac{\pi}{12}\right)$ **C).** $\frac{2}{\sqrt{3}}$ **D).** $\frac{1}{2}$ **E). a.n.g**

23). Evaluate $\tan\left(\frac{11\pi}{3}\right)$

A). $-\sqrt{3}$ **B).** $\sqrt{3}$ **C).** $\frac{1}{\sqrt{3}}$ **D).** $\frac{-1}{\sqrt{3}}$ **E). a.n.g**

24). Find the exact value of $\tan\pi$

A). $\frac{1}{\sqrt{3}}$ **B). 0** **C). 1** **D).** $\frac{\sqrt{2}}{2}$ **E). a.n.g**

4 TEAM MEMBER **FOUR** ONLY

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TEAM MEMBER **FOUR** ONLY 4

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25). Find the exact value of $\csc\frac{5\pi}{4}$

A). $\frac{-2\sqrt{3}}{3}$ **B).** $\sqrt{2}$ **C).** 2 **D).** $-\sqrt{2}$ **E). a.n.g**

26). Simply $\sin(60°)\cot(30°)+\sin(180°)$

A). $\frac{5}{2}$ **B).** $\frac{3}{2}$ **C).** 0 **D).** $\frac{\sqrt{3}+1}{2}$ **E). a.n.g**

27). Evaluate $2\cos^2(75°)-2\sin^2(75°)$

A). $-\sqrt{3}$ **B).** $\sqrt{3}$ **C).** $\frac{1}{2}$ **D).** $\frac{\sqrt{3}}{4}$ **E). a.n.g**

28). Evaluate $[\cos(120°)][\csc(30°)]$

A) $\frac{2\sqrt{3}}{3}$ **B).** $\sqrt{3}$ **C).** $\frac{1}{2}$ **D).** $\frac{-\sqrt{3}}{3}$ **E). a.n.g**

29). Evaluate $2\sin(15°)\cos(15°)$

A). $\frac{\sqrt{3}}{2}$ **B).** $\frac{1}{2}$ **C). 1** **D).** $\frac{\sqrt{2}}{2}$ **E). a.n.g**

30). Evaluate $[\sin(30°)][\cos(60°)]$

A). $\frac{\sqrt{3}}{4}$ **B).** $\cot\left(\frac{1}{2}\right)$ **C).** $\frac{1}{4}$ **D).** $\frac{3}{4}$ **E). a.n.g**

31). Evaluate $\cos(315°)$

A). $\frac{\sqrt{6}}{2}$ **B).** $\frac{\sqrt{6}-\sqrt{2}}{4}$ **C).** $\frac{\sqrt{6}+\sqrt{2}}{4}$ **D).** $\frac{\sqrt{2}}{2}$ **E). a.n.g**

32). Evaluate $[\cos\pi]\left[\cos\frac{\pi}{3}\right]+\left[\tan\frac{\pi}{3}\right]\left[\sin\left(\frac{\pi}{3}\right)\right]$

A). $\frac{\sqrt{3}}{2}$ **B). 0** **C). 1** **D).** $\frac{\sqrt{2}}{2}$ **E). a.n.g**