1) *Multiple Choice* What is simplified form of

$\sin\left(\dfrac{\pi}{2} - \theta\right) \tan \theta$?

Ⓐ $\sin \theta$ Ⓑ $\cos \theta$ Ⓒ $\sec \theta$

Ⓓ $\sin^2 \theta$ Ⓔ $\tan^2 \theta$

2) *Multiple Choice* Which of the following is

equal to $\tan\left(-\dfrac{\pi}{4}\right)$?

Ⓐ $\tan\left(\dfrac{\pi}{4}\right)$ Ⓑ $\sin\left(\dfrac{\pi}{4}\right)$

Ⓒ $-\tan\left(\dfrac{\pi}{4}\right)$ Ⓓ $\cos\left(-\dfrac{\pi}{4}\right)$

Ⓔ $-\cos\left(\dfrac{\pi}{4}\right)$

3)

Multiple Choice What is the simplified

form of $\dfrac{\cos \theta}{1 - \sin^2 \theta}$?

Ⓐ $\sin \theta$ Ⓑ $\cos \theta$ Ⓒ $\sec \theta$

Ⓓ $\cot \theta$ Ⓔ $\cos^2 \theta$

4) *Multiple Choice* If $\cos \theta = -\dfrac{4}{5}$ and

$\pi < \theta < \dfrac{3\pi}{2}$, which of the following is true?

Ⓐ $\sin \theta = -\dfrac{5}{4}$ Ⓑ $\tan \theta = \dfrac{3}{4}$

Ⓒ $\tan \theta = -\dfrac{4}{3}$ Ⓓ $\cot \theta = -\dfrac{3}{4}$

Ⓔ $\sin \theta = \dfrac{3}{5}$

5) *Multiple Choice* What is a solution of the
equation $4 \cos x + 2 = 0$?

Ⓐ $\dfrac{2\pi}{3}$ Ⓑ $\dfrac{\pi}{6}$ Ⓒ $\dfrac{5\pi}{3}$

Ⓓ $\dfrac{\pi}{4}$ Ⓔ $\dfrac{3\pi}{4}$

6) *Multiple Choice* What is a solution of the
equation $\sin x = \sqrt{3} \cos x$?

Ⓐ $\dfrac{\pi}{3}$ Ⓑ $\dfrac{\pi}{6}$ Ⓒ $\dfrac{2\pi}{3}$

Ⓓ $\dfrac{\pi}{4}$ Ⓔ $\dfrac{5\pi}{4}$

7) *Multiple Choice* What is a solution of the
equation $6 \sin x - 6 = 0$?

Ⓐ $\dfrac{\pi}{4}$ Ⓑ $\dfrac{2\pi}{3}$ Ⓒ $\dfrac{3\pi}{4}$

Ⓓ $\dfrac{\pi}{2}$ Ⓔ $\dfrac{5\pi}{6}$

8) *Multiple Choice* What is a solution of the
equation $5 \tan x - 5 = 0$?

Ⓐ $-\dfrac{\pi}{4}$ Ⓑ $\dfrac{\pi}{6}$ Ⓒ $-\dfrac{3\pi}{4}$

Ⓓ $\dfrac{\pi}{12}$ Ⓔ $-\dfrac{4\pi}{5}$

9). *Multiple Choice* What is the exact value of $\cos\dfrac{5\pi}{12}$?

(A) $\dfrac{\sqrt{2}+\sqrt{6}}{4}$

(B) $\dfrac{\sqrt{2}-\sqrt{6}}{4}$

(C) $\dfrac{\sqrt{3}-\sqrt{2}}{4}$

(D) $\dfrac{\sqrt{3}+\sqrt{2}}{4}$

(E) $\dfrac{\sqrt{6}-\sqrt{2}}{4}$

10) *Multiple Choice* What is the exact value of $\tan 330°$?

(A) $\sqrt{3}$

(B) $-\dfrac{\sqrt{3}}{3}$

(C) $-\sqrt{3}$

(D) $\dfrac{3}{\sqrt{3}}$

(E) $-\dfrac{3}{\sqrt{3}}$

11) *Multiple Choice* If $\sin u = \dfrac{8}{17}$ with $0 < u < \dfrac{\pi}{2}$ and $\cos v = -\dfrac{12}{13}$ with $\pi < v < \dfrac{3\pi}{2}$, what is $\sin(u+v)$?

(A) $\dfrac{56}{221}$

(B) $-\dfrac{171}{221}$

(C) $-\dfrac{56}{221}$

(D) $\dfrac{8}{13}$

(E) $-\dfrac{88}{221}$

12) *Multiple Choice* If $\cos u = \dfrac{4}{5}$ with $\dfrac{3\pi}{2} < u < 2\pi$ and $\sin v = \dfrac{12}{13}$ with $\dfrac{\pi}{2} < v < \pi$, what is $\cos(u-v)$?

(A) $\dfrac{56}{65}$

(B) $-\dfrac{16}{65}$

(C) $\dfrac{16}{65}$

(D) $-\dfrac{56}{65}$

(E) $\dfrac{144}{65}$

Find the exact value of the trig function.

13) $\sin(-15°)$

14) $\cos\left(\dfrac{11\pi}{12}\right)$

15) $\tan\left(\dfrac{\pi}{12}\right)$

Verify the following identies.

16) $\dfrac{1}{\tan x} + \tan x = \sec x \csc x$

17) $\dfrac{\sec x + 1}{\tan x} = \dfrac{\tan x}{\sec x - 1}$

18) $\dfrac{\sec^2 \theta - 1}{\sin \theta} = \dfrac{\sin \theta}{1 - \sin^2 \theta}$

19) $\dfrac{\sin x}{1 + \cos x} + \dfrac{1 + \cos x}{\sin x} = 2\csc x$

20) $\tan^4 x + \tan^2 x = \sec^4 x - \sec^2 x$

Solve each equation on the interval [0, 2π).

21) $\sin\left(x+\dfrac{\pi}{2}\right)-\sin\left(x-\dfrac{\pi}{2}\right)=\sqrt{3}$

22) $\cos\left(x+\dfrac{3\pi}{4}\right)-\cos\left(x-\dfrac{3\pi}{4}\right)=0$

23) $2\csc^2 x=3\cot^2-1$

24) $\csc^2 x-2\csc x=2-4\sin x$

Find the general solutions.

25) $\cos^2 x-\sin x=1$

26) $2\tan^2 x-1=5$