PreCalculus Quiz 10 version 1

name:

1.

$$\cos(30^\circ) + \sin(30^\circ) = 1$$

A True B False

2. Picture yourself in a 'special' world where

$$c^2 + s^2 = 1$$

Under this assumption, select the true statement/s:

A Every $\frac{c^2}{1-s}$ can be 'exchanged' for $(1+s)$

B Every $c^2 + s^2$ can be 'exchanged' for 1

C Every c^2 can be 'exchanged' for $(1-s)(1+s)$

D none of these

3. Suppose

$$x^2 + y^2 = 1$$

is a known identity. Determine if, under such assumption, the following is an identity

$$2\,x^5 + 2\,y^2 = 2x^5 - 2x^2 + 2x$$

A YES, identity B NOT an identity

4.

$$(\sec(x) + \tan(x))^2 = \frac{1+\sin(x)}{1-\sin(x)}$$

A identity B not identity

5. Picture yourself in a 'special' world where

$$c^2 + s^2 = 1$$

Under this assumption, select the true statement/s:

A Every c^2 can be 'exchanged' for $1 - s^2$

B Every $\frac{1}{1+c}$ can be 'exchanged' for $\frac{1-c}{s^2}$

C Every s^2 can be 'exchanged' for $(1-c)(1+c)$

D Every $c^4 + s^4$ can be 'exchanged' for 1

E Every s^2 can be 'exchanged' for $1 - c^2$

F none of these

6. The famous identity:

$$\sin^2(\theta) + \cos^2(\theta) = 1$$

can be 'tweaked' to produce the following identity/ies:

A $\cot^2(\theta) = \csc^2(\theta) - 1$

B $\cot^4(\theta) = \csc^4(\theta) - 1$

C $1 + \cot^2(\theta) = \csc^2(\theta)$

D $\frac{\sin^2(\theta)}{\sin^2(\theta)} + \frac{\cos^2(\theta)}{\sin^2(\theta)} = \frac{1}{\sin^2(\theta)}$

7.

$$\sec x + \tan(x) = \frac{\cos(x)}{1-\sin(x)}$$

A not an identity B identity

8. Select Expressions Equivalent to

$$\sin(x)$$

A $-\sin(-x)$

B $\frac{1}{\frac{1}{\sin(x)}}$

C $\dfrac{1}{\sec\left(\frac{\pi}{2}-x\right)}$

D $\dfrac{\text{adj}}{\text{hyp}}$

E $\dfrac{1}{\csc(x)}$

F $\sin(x)$

9. $\dfrac{1+\cos(x)}{1-\cos x}-\dfrac{1-\cos x}{1+\cos x}=4\cot(x)\csc(x)$

A identity B not an identity

10. $\cos(x)(\csc x-\sec(x))-\cot(x)$

A 0 B $\cos^2 x$ - $\tan^2 x$ C -1 D 1

11. Select correct applications of the very famous identity:

$$\sin^2(\theta)+\cos^2(\theta)=1$$

A the quantity $\sin^4(\theta)+\cos^4(\theta)$ can always be exchanged for "1"

B the quantity "$\cos^2(\theta)$" can always be exchanged for $1-\sin^2(\theta)$

C "1" can always be exchanged for the quantity $\sin^2(\theta)+\cos^2(\theta)$

D the quantity $\sin^2(\theta)+\cos^2(\theta)$ can always be exchanged for "1"

E the quantity "$\sin^2(\theta)$" can always be exchanged for $1-\cos^2(\theta)$

12. Select correct applictions of the very famous identity:

$$\tan^2(\theta)+1=\sec^2(\theta)$$

A the quantity "-1" can always be exchanged for "$\tan^2(\theta)-\sec^2(\theta)$"

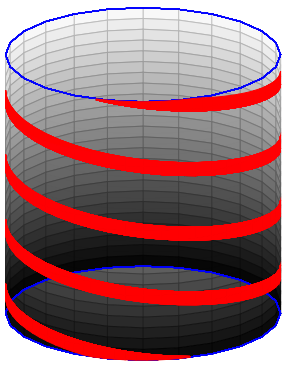
B the quantity "$\sec^2(\theta)$" can always be exchanged for "$\tan^2(\theta)+1$"

C the quantity "$\tan^2(\theta)+1$" can always be exchanged for "$\sec^2(\theta)$"

D the quantity "1" can always be exchanged for "$\tan^2(\theta)-\sec^2(\theta)$"

E none of these

13. What is the area of the red ribbon? Suppose we have a right cylinder with a ribbon pained on the outside. Suppose the cylinder's radius $r=10$ and the cylinder's height is $h=35$, also assume the horizontal width of the ribbon is $x=2$, moreover assume the ribbon makes exactly 4 revolutions around the cylinder. What is the area of the painted ribbon?



A Area = $2\pi(10)\cdot 2\cdot 35\cdot 4$

B Area = 90

C Area = 100

D Area = $2\pi(10)\cdot 2\cdot 4$

E Area = 70

F Area = $\pi(10)^2\cdot 2\cdot 35$

G Area = 70π

H there is not enough information to determine the area

I Area = $2\pi(10)^2\cdot 2\cdot 35\cdot 4$

14. Picture yourself in a special world where

$$c^2 + s^2 = 1$$

Under this assumption, select the true statement/s:

A Every $\frac{s^2}{c^2}$ can be exchanged for $\frac{1}{c^2} - 1$

B Every $1 + \frac{s^2}{c^2}$ can be exchanged for $\frac{1}{c^2}$

C none of these

15. The famous identity:

$$\tan(x) = \frac{1}{\cot(x)}$$

can be 'tweaked' to produce the following identity/ies:

A $0 = \tan(x)\cot(x) - 1$

B $0 = 1 - \tan(x)\cot(x)$

C $1 = \tan(x)\cot(x)$

D $\cot(x)\tan(x) = 1$

E $\cot(x) = \frac{1}{\tan(x)}$

F $\tan(2\theta) = \frac{1}{\cot(2\theta)}$

G none of these

16. Picture yourself in a special world where

$$c^2 + s^2 = 1$$

Under this assumption, select the true statement/s:

A Every $(c+s)^2$ can be exchanged for 1

B Every $(c-s)^2$ can be exchanged for $1 - 2sc$

C Every $(c+s)^2$ can be exchanged for $1 + 2sc$

17.

$$(\sin(x))(\tan(x)\cos(x) - \cot x \cos(x)) = 1 - 2\cos^2(x)$$

A not an identity B identity

18.

$$\tan^2(\theta) + 1 = \sec^2(\theta)$$

can be 'tweaked' to produce the following identity/ies.

A $\tan^2(\theta)\cos^2(\theta) = \cos^2(\theta)$

B $\tan^2(\theta) = \sec^2(\theta) - 1$

C $\tan^2(\theta)\cos^2(\theta) = 1 - \cos^2(\theta)$

19.

$$\frac{\sec x + \csc x}{\tan x + 1}$$

equivalent to:

A $\cos x$ B $\tan x$ C $\sec x$ D $\csc x$

20. assume ♡ represents some angle

$$\cos^2(♡) + \sin^2(♡) = 1$$

A False B True

21.

$$\frac{\tan(x) + \cot(x)}{\tan x + \cot x} = \frac{1}{\sin^2 x - \cos^2(x)}$$

A not identity B identity

22.

$$(\sec x - \tan(x))(\sec x + \tan x) = 1$$

A identity B not an identity

23.

$$\csc^2 x - \cos x \sec x = \cot^2 x$$

A not an identity B identity

24. Select Expressions Equivalent to

$$\frac{1}{\sec(x)}$$

A $\cos(x)$

B $\cos(-x)$

C $\cot(90 - x)$

D xTan

E $\frac{1}{\frac{1}{\sin(x)}}$

F $-\sin(x)$

G $\sin(x)$

25. The famous identity:

$$\sin^2(\theta) + \cos^2(\theta) = 1$$

can be 'tweaked' to produce the following identity/ies:

A $\sin^2(\theta) = 1 - \cos^2(\theta)$

B $\sin^2(\theta) = [1 - \cos(\theta)][1 + \cos(\theta)]$

C $\sin^5(\theta) = 1 - \cos^5(\theta)$

D none of these

26. The famous identity:

$$\sin^2(\theta) + \cos^2(\theta) = 1$$

can be 'tweaked' to produce the following identity/ies:

A $\sin^2(\theta) = 1 - \cos^2(\theta)$

B none of these

27.

$$\frac{\sec(x) + \csc(x)}{\tan x + \cot(x)}$$

A $\cot x + \sin^2 x$

B $\cos x + 1$

C $\tan x - \sec(x)$

D $\sin(x) + \cos(x)$

28. The famous identity:

$$\sin^2(\theta) + \cos^2(\theta) = 1$$

can be 'tweaked' to produce the following identity/ies:

A $\frac{\sin^2(90° - \theta)}{1+\sin(\theta)} + \sin(\theta) = \sin^2(\theta) + \cos^2(\theta)\}\{$

B $\frac{\sin^2(90° - \theta)}{1+\sin(\theta)} + \sin(\theta) = 1$

C $\sin^2(90° - \theta) = 1 - \sin^2(\theta)$

D $\cos^2(\theta) = 1 - \sin^2(\theta)$

29.

Select Expressions Equivalent to

$\sin(x)$

A

$\cot(90 - x)$

B

$\frac{1}{\frac{1}{\sin(x)}}$

C

$\frac{\text{opp}}{\text{hyp}}$

D

$-\sin(-x)$

E

$\frac{1}{\csc(x)}$

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30. Suppose $x + \frac{1}{x} = 1$ compute the value of

$x^{2133} + x^{-2133}$

A $\frac{-1}{2133}$ B $\frac{1}{2133}$ C x D $\frac{1}{x^{-2133}}$ E 1
F $\frac{1}{x}$ G 2 H 3 I $\frac{1}{x^{2133}}$
