

Simplify each of the following in terms of "COSINE".

1.)  $1 - \sin^2 x$

$$\boxed{\cos^2 x}$$

2.)  $\sin^2 x + 3\cos^2 x$

$$1 - \cos^2 x + 3\cos^2 x$$

$$\boxed{1 + 2\cos^2 x}$$

3.)  $3\sin^2 x - \cos^2 x$

$$3(1 - \cos^2 x) - \cos^2 x$$

$$3 - 3\cos^2 x - \cos^2 x$$

$$\boxed{3 - 4\cos^2 x}$$

4.)  $\csc x \tan x$

$$\frac{1}{\sin x} \cdot \frac{\sin x}{\cos x}$$

$$\boxed{\frac{1}{\cos x}}$$

Simplify each of the following in terms of "SINE".

5.)  $\cot x \cos x$

$$\frac{\cos x}{\sin x} \cdot \frac{\cos x}{1}$$

$$\frac{\cos^2 x}{\sin x} \rightarrow \boxed{\frac{1 - \sin^2 x}{\sin x}}$$

7.)  $\sin^3 x + \sin x \cos^2 x$

$$\sin x (\sin^2 x + \cos^2 x)$$

$$\sin x (1)$$

$$\boxed{\sin x}$$

6.)  $\tan^2 x \cos^2 x + \sin^2 x$

$$\frac{\sin^2 x}{\cos^2 x} \cdot \frac{\cos^2 x}{1} + \sin^2 x$$

$$\sin^2 x + \sin^2 x$$

$$\boxed{2\sin^2 x}$$

8.)  $\cot x \csc x \sec x$

$$\frac{\cos x}{\sin x} \cdot \frac{1}{\sin x} \cdot \frac{1}{\cos x}$$

$$\boxed{\frac{1}{\sin^2 x}}$$

**Simplify.**

9.)  $\csc^2 x - 2 \cot x$

$$1 + \cot^2 x - 2 \cot x$$
$$\cot^2 x - 2 \cot x + 1$$

$$( \cot x - 1 ) ( \cot x - 1 )$$

11.)  $\tan^2 x - \tan x - 2$

$$( \tan x + 1 ) ( \tan x - 2 )$$

13.)  $2 \sin^2 x - 5 \cos x + 1$

$$2(1 - \cos^2 x) - 5 \cos x + 1$$
$$2 - 2 \cos^2 x - 5 \cos x + 1$$
$$-2 \cos^2 x - 5 \cos x + 3$$
$$2 \cos^2 x + 5 \cos x - 3$$

$$( 2 \cos x - 1 ) ( \cos x + 3 )$$

10.)  $\cos x - \cos x \sin^2 x$

$$\cos x ( 1 - \sin^2 x )$$
$$\cos x ( \cos^2 x )$$

$$\cos^3 x$$

12.)  $4 \sin^2 x - 3 \sin x - 1$

$$( 4 \sin x + 1 ) ( \sin x - 1 )$$

14.)  $\tan^2 x + \sec^2 x + \sec x$

$$\sec^2 x - 1 + \sec^2 x + \sec x$$
$$2 \sec^2 x + \sec x - 1$$

$$( 2 \sec x - 1 ) ( \sec x + 1 )$$