**Trigonometric Identities GREEN**

1. Simplify each of the following expressions:

 a. 1 - cos²½Θ b. 5 sin²3Θ + 5 cos²3Θ

 c. $\frac{\sqrt{1-cos^{2}x}}{cosx}$ d. sin4Θ + 2sin2Θ cos2Θ + cos4Θ

2. Prove that:

 a. (sinΘ + cosΘ)² ≡ 1 + 2 sinΘ cosΘ

 b. $\frac{ 1 }{cosΘ}$ – cosΘ ≡ sinΘ tanΘ

 c. tanx + $\frac{ 1 }{tanx}$ ≡ $\frac{ 1 }{sinx cosx}$

 d. (2 sinΘ – cosΘ)² + (sinΘ + 2 cosΘ)² ≡ 5

3. Find the value of the following, without using a calculator:

a. cosΘ, given that tanΘ = $\frac{5}{12}$ and Θ is acute

b. sinΘ, given that cosΘ = - $\frac{3}{5}$ and Θ is obtuse

c. tanΘ, given that sinΘ = - $\frac{7}{25}$ and 270° < Θ < 360°

**Trigonometric Identities AMBER**

Remember:

$\frac{sinΘ}{cosΘ}$ ≡ tanΘ

sin²Θ + cos²Θ ≡ 1

Look for these identities and any rearrangements to substitute and simplify.

1. Simplify each of the following expressions:

 a. 1 - cos²½Θ b. 5 sin²3Θ + 5 cos²3Θ

 c. $\frac{\sqrt{1-cos^{2}x}}{cosx}$ d. sin4Θ + 2sin2Θ cos2Θ + cos4Θ

2. Prove that:

 a. (sinΘ + cosΘ)² ≡ 1 + 2 sinΘ cosΘ

 b. $\frac{ 1 }{cosΘ}$ – cosΘ ≡ sinΘ tanΘ

 c. tanx + $\frac{ 1 }{tanx}$ ≡ $\frac{ 1 }{sinx cosx}$

 d. (2 sinΘ – cosΘ)² + (sinΘ + 2 cosΘ)² ≡ 5

3. Find the value of the following, without using a calculator:

Remember:

$\frac{sinΘ}{cosΘ}$ ≡ tanΘ

sin²Θ + cos²Θ ≡ 1

Sketch right-angled triangles and trigonometric graphs to help you with these questions.

a. cosΘ, given that tanΘ = $\frac{5}{12}$ and Θ is acute

b. sinΘ, given that cosΘ = - $\frac{3}{5}$ and Θ is obtuse

c. tanΘ, given that sinΘ = - $\frac{7}{25}$ and 270° < Θ < 360°

**Trigonometric Identities RED**

Remember:

$\frac{sinΘ}{cosΘ}$ ≡ tanΘ

sin²Θ + cos²Θ ≡ 1

Look for these identities and any rearrangements to substitute and simplify.

1. Simplify each of the following expressions:

 a. 1 - cos²½Θ b. 5 sin²3Θ + 5 cos²3Θ

sin²Θ + cos²Θ ≡ 1

sin²Θ ≡ 1 - cos²Θ

 c. $\frac{\sqrt{1-cos^{2}x}}{cosx}$ d. sin4Θ + 2sin2Θ cos2Θ + cos4Θ

sin²Θ + cos²Θ ≡ 1

sin²Θ ≡ 1 - cos²Θ

and $\frac{sinΘ}{cosΘ}$ ≡ tanΘ

2. Prove that:

 a. (sinΘ + cosΘ)² ≡ 1 + 2 sinΘ cosΘ

 b. $\frac{ 1 }{cosΘ}$ – cosΘ ≡ sinΘ tanΘ

 c. tanx + $\frac{ 1 }{tanx}$ ≡ $\frac{ 1 }{sinx cosx}$

 d. (2 sinΘ – cosΘ)² + (sinΘ + 2 cosΘ)² ≡ 5

3. Find the value of the following, without using a calculator:

Remember:

$\frac{sinΘ}{cosΘ}$ ≡ tanΘ

sin²Θ + cos²Θ ≡ 1

Sketch right-angled triangles and trigonometric graphs to help you with these questions.

a. cosΘ, given that tanΘ = $\frac{5}{12}$ and Θ is acute

b. sinΘ, given that cosΘ = - $\frac{3}{5}$ and Θ is obtuse

c. tanΘ, given that sinΘ = - $\frac{7}{25}$ and 270° < Θ < 360°