**MHF4U UNIT TEST 2 ; TRIGONOMETRIC FUNCTIONS**

**Overall expectations ;**

1. demonstrate an understanding of the meaning and application of radian measure;

**2.** make connections between trigonometric ratios and the graphical and algebraic representations of the corresponding trigonometric functions and between trigonometric functions and their reciprocals, and use these connections to solve problems;

**3.** solve problems involving trigonometric equations and prove trigonometric identities.

*Thinking and Communication marks will also be awarded for showing process.*

**Knowledge**

1. Calculate an exact ratio for Sin60° [K1, T1 ]
2. Solve the following trigonometric equations for 0 ≤ *x* ≤ 2π, and verify by graphing with technology: [ K2 , I3 ] x 4
3. 3sin *x* - 1 = 0
4. 2 sin *x² = 5*
5. *Cos x* – 1 = 0

 iv ) cos 2*x* = 4

1. i) Convert 92° to Radians. Ii) Convert 2 radians to degrees. [ K2 x 2 ]

**Communication**

3) A sinusoidal function has an amplitude of 0.5 units, a period of 3π, and a

maximum at (0, 1). Represent the function with an equation and a graph. [ C4, K2]

2) Transform the graph of *f*(*x*) = sin *x* to sketch *g*(*x*) = - 6cos (2*x*) – 5,

 and state the period, amplitude, and vertical shift of each function. [ K4, C2 ]

**Application**

1. Calculate the arc length on a circle that has radius 17cm and an angle of

4. 2 Radians. [ A2 ]

1. The swing of a pendulum is modelled with a sinusoidal function. If the pendulum is 40 cm long and begins its swing 30cm to the left of the vertical line, and ends 30cm to the right after a 1.5 second swing,
2. graph the function [ C5 ]
3. write the equation [ A4]
4. Use the equation to find where the pendulums position from the vertical line after 10 seconds. [ A3 ]

**Thinking and Inquiry**

6\_) Use the compound angle formula cos ( A + B) to prove the double angle formula for cos (2A) [T2]

1. Prove the identity :

2 + tanx = (2 sin²xcosx +2 cos³x + sinx )/ cosx

[ T2 ]