MCR3U **Lessons 4.6A/B Trig Identity Homework Sheet**

#1. Trig Identities Day 1 Prove the following identities.

a	$(sin\theta + cos\theta)^2 = 1 + 2sin\theta cos\theta$
b	$2sin^2\theta - 1 = sin^2\theta - cos^2\theta$
c	$\frac{1}{sin^2\theta} + \frac{1}{cos^2\theta} = \frac{1}{sin^2\theta cos^2\theta}$
d	$\frac{1 + 2sin\theta cos\theta}{sin\theta + cos\theta} = sin\theta + cos\theta$

e	$cos^2\theta = sin^2\theta + 2cos^2\theta - 1$
f	$tan^2\theta + 1 = sec^2\theta$
g	$sin\theta + tan\theta = tan\theta(1 + cos\theta)$
h	$\frac{tan^2\theta}{1 + tan^2\theta} = sin^2\theta$

#2. Trig Identities Day 2 Prove the following identities.

a	$\frac{cot\theta}{tan\theta} = \frac{1 - sin^2\theta}{1 - cos^2\theta}$
b	$cos^2\theta = (1 - sin\theta)(1 + sin\theta)$
c	$\frac{1 - tan^2\theta}{tan\theta - tan^2\theta} = 1 + \frac{1}{tan\theta}$
d	$\frac{sin^2\theta}{1 - cos\theta} = 1 + cos\theta$
e	$\frac{1}{sec\theta} + \frac{sin\theta}{cot\theta} = \frac{1}{cos\theta}$
f	$1 - cos^2\theta = \frac{cos\theta sin\theta}{cot\theta}$
g	$sec\theta cos\theta + sec\theta sin\theta = 1 + tan\theta$
h	$\frac{csc\theta + cot\theta}{csc\theta - cot\theta} = \frac{1 + 2cos\theta + cos^2\theta}{sin^2\theta}$
i	$\frac{cos^2\theta - sin^2\theta}{cos^2\theta + sin\theta cos\theta} = \frac{cot\theta - 1}{cot\theta}$

j	$sec\theta + \frac{1}{cot\theta} = \frac{1 + sin\theta}{cos\theta}$
k	$\frac{sec\theta + 1}{sec\theta - 1} + \frac{cos\theta + 1}{cos\theta - 1} = 0$
l	$\frac{cos\theta}{csc\theta} - \frac{sin\theta}{tan\theta} = \frac{sin\theta - 1}{sec\theta}$
m	$\frac{sec^2\theta}{sin^2\theta} = \frac{1}{sin^2\theta} + \frac{1}{cos^2\theta}$
n	$sin^4x + 2sin^2cos^2x + cos^4x = 1$
o	$\frac{4}{cos^2x} - 5 = 4tan^2x - 1$
p	$sin\theta tan\theta + cos\theta - sec\theta + 1 = sec^2\theta cos^2\theta$
q	$\frac{sin^2x - 6sinx + 9}{sin^2x - 9} = \frac{sinx - 3}{sinx + 3}$
***r**	$\frac{tan\theta sin\theta}{tan\theta + sin\theta} = \frac{tan\theta - sin\theta}{tan\theta sin\theta}$