Math 115 – Identities

(For preparation only. Not allowed on the exam.)

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

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

(3)
$$1 + \cot^2 x = \csc^2 x$$

(4)
$$\sin 2x = 2 \sin x \cos x$$

(5)
$$\cos 2x = \cos^2 x - \sin^2 x$$

(6)
$$\cos^2 x = \frac{1}{2}(1 + \cos 2x)$$

(7)
$$\sin^2 x = \frac{1}{2}(1 - \cos 2x)$$

(8)
$$\sin x \cos y = \frac{1}{2}\left(\sin(x - y) + \sin(x + y)\right)$$

(9)
$$\sin x \sin y = \frac{1}{2}\left(\cos(x - y) - \cos(x + y)\right)$$

(10)
$$\cos x \cos y = \frac{1}{2}\left(\cos(x - y) + \cos(x + y)\right)$$

(11)
$$\cosh^2 x - \sinh^2 x = 1$$

(12)
$$1 - \tanh^2 x = \operatorname{sech}^2 x$$

(13)
$$\coth^2 x - 1 = \operatorname{csch}^2 x$$