

## MATH 5

### Formulas to be provided on Test 3 and Final Exam

$$\cos(x + y) = \cos x \cos y - \sin x \sin y$$

$$\cos(x - y) = \cos x \cos y + \sin x \sin y$$

$$\sin(x + y) = \sin x \cos y + \cos x \sin y$$

$$\sin(x - y) = \sin x \cos y - \cos x \sin y$$

$$\tan(x + y) = \frac{\tan x + \tan y}{1 - \tan x \tan y}$$

$$\tan(x - y) = \frac{\tan x - \tan y}{1 + \tan x \tan y}$$

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

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

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

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

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

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

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

$$c^2 = a^2 + b^2 - 2ab \cos \gamma$$

$$\frac{a}{\sin \alpha} = \frac{b}{\sin \beta}$$

$$\text{Area}_{\text{triangle}} = \frac{1}{2}ab \sin \gamma$$

$$\text{Volume}_{\text{cone}} = \frac{1}{3} \text{Area}_{\text{base}} h$$