Trig Identities

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The following will be provided for you to use on the final exam:

Addition Rules:	$\sin(A+B) = \sin A\cos B + \cos A\sin B$	$\sin(A-B) = \sin A\cos B - \cos A\sin B$
	$\cos(A+B) = \cos A\cos B - \sin A\sin B$	$\cos(A-B) = \cos A\cos B + \sin A\sin B$
	$\tan(A+B) = \frac{\tan A+\tan B}{1-\tan A\tan B}$	$\tan(A-B) = \frac{\tan A-\tan B}{1+\tan A\tan B}$
Product Rules:	$\sin A\cos B = \frac{1}{2}(\sin(A-B)+\sin(A+B))$	
	$\sin A\sin B = \frac{1}{2}(\cos(A-B)-\cos(A+B))$	
	$\cos A\cos B = \frac{1}{2}(\cos(A-B)+\cos(A+B))$	
Sum-To-Product:	$\sin A+\sin B = 2\sin\frac{A+B}{2}\cos\frac{A-B}{2}$	$\sin A-\sin B = 2\cos\frac{A+B}{2}\sin\frac{A-B}{2}$
	$\cos A+\cos B = 2\cos\frac{A+B}{2}\cos\frac{A-B}{2}$	$\cos A-\cos B = -2\sin\frac{A+B}{2}\sin\frac{A-B}{2}$
Double Angle:	$\sin x\cos x = \frac{1}{2}\sin(2x)$	$\sin(2x) = 2\sin(x)\cos(x)$
	$\sin^2 x = \frac{1}{2}(1-\cos(2x))$	$\cos(2x) = 1-2\sin^2(x)$
	$\cos^2 x = \frac{1}{2}(1+\cos(2x))$	$\cos(2x) = 2\cos^2(x)-1$
	$\tan(2x) = \frac{2\tan(x)}{1-\tan^2(x)}$	$\cos(2x) = \cos^2(x)-\sin^2(x)$
Half Angle:	$\sin\frac{x}{2} = \pm\sqrt{\frac{1-\cos x}{2}}$	
	$\cos\frac{x}{2} = \pm\sqrt{\frac{1+\cos x}{2}}$	
	$\tan\frac{x}{2} = \frac{\sin x}{1+\cos x}$	

Note that the double angle formulas are just the Product Rule ones, with $A = B = x$ plugged in and the half-angle rules are just the double-angle ones solved for the other term.