Indefinite integrals and Trigonometric Identities

Some trigonometric identities which may or may not be needed include:

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

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

$$\sin 2x = 2\,\sin x\,\cos x$$

$$\sin A\,\cos B = \frac{1}{2}(\sin(A+B) + \sin(A-B))$$

$$\cos A\,\cos B = \frac{1}{2}(\cos(A+B) + \cos(A-B))$$

$$\sin A\,\sin B = \frac{1}{2}(\cos(A-B) - \cos(A+B))$$

Some integrals which may or may not be needed include:

$$\int \frac{du}{a^2 + u^2} = \frac{1}{a}\arctan\left(\frac{u}{a}\right) + c$$

$$\int \frac{du}{\sqrt{a^2 - u^2}} = \arcsin\left(\frac{u}{a}\right) + c$$

$$\int \sec u\,du = \ln|\sec u + \tan u| + c$$

$$\int \csc u\,du = -\ln|\csc u + \cot u| + c$$

$$\int \tan u\,du = \ln|\sec u| + c$$

$$\int \sec^3 u\,du = \frac{1}{2}\tan u \sec u + \frac{1}{2}\ln|\sec u + \tan u| + c$$