MATH 1710 - Integrals you need to know

The following is a list of integrals which you need to know for this course. These are the integrals/rules you are allowed to just use. All other integrals must be derived.

$$\int (f(x) \pm g(x))\,dx = \int f(x)\,dx \pm \int g(x)\,dx.$$
$$\int cf(x)\,dx = c\int f(x)\,dx$$
$$\int u\,dv = uv - \int v\,du$$
$$\int x^n\,dx = \frac{x^{n+1}}{n+1} + C \text{ for } n \neq -1.$$
$$\int \frac{1}{x}\,dx = \ln|x| + C$$
$$\int \cos x\,dx = \sin x + C$$
$$\int \sin x\,dx = -\cos x + C$$
$$\int \tan x\,dx = \ln|\sec x| + C$$
$$\int \cot x\,dx = -\ln|\csc x| + C$$
$$\int \sec^2 x\,dx = \tan x + C$$
$$\int \csc^2 x\,dx = -\cot x + C$$
$$\int \sec x \tan x\,dx = \sec x + C$$
$$\int \csc x \cot x\,dx = -\csc x + C$$
$$\int \frac{1}{\sqrt{1-x^2}}\,dx = \mathrm{Sin}^{-1}x + C$$
$$\int \frac{1}{1+x^2}\,dx = \mathrm{Tan}^{-1}x + C$$
$$\int e^{kx}\,dx = \frac{e^{kx}}{k} + C \text{ for } k \neq 0.$$
$$\int a^{kx}\,dx = \frac{a^{kx}}{k\ln a} + C \text{ for } k \neq 0, a > 0,\ a \neq 1.$$

The following is a list of identities which you need to know for this course.

$$\sin^2\theta + \cos^2\theta = 1$$
$$\tan^2\theta + 1 = \sec^2\theta$$
$$\cot^2\theta + 1 = \csc^2\theta$$
$$\sin 2\theta = 2\sin\theta\cos\theta$$
$$\cos 2\theta = \cos^2\theta - \sin^2\theta$$
$$\sin^2\theta = \frac{1-\cos 2\theta}{2}$$
$$\cos^2\theta = \frac{1+\cos 2\theta}{2}$$
Domain and range for $\mathrm{Sin}^{-1}x$, $\mathrm{Cos}^{-1}x$, $\mathrm{Tan}^{-1}x$, $\mathrm{Cot}^{-1}x$.

The following is a list of topics which were discussed in the course, but are not ones you need to memorize. However, you are allowed to use them if you think they are relevant. Anything not on here and discussed in this or any previous math course is fair to be tested.

$$\tan 2\theta = \frac{2\tan\theta}{1-\tan^2\theta}$$
$\sin(A \pm B)$, $\cos(A \pm B)$, $\tan(A \pm B)$.
$\sin A \sin B$, $\sin A \cos B$, $\cos A \cos B$.
The domain and range of $\mathrm{Sec}^{-1}x$, $\mathrm{Csc}^{-1}x$.
The derivatives of $\mathrm{Sec}^{-1}x$, $\mathrm{Csc}^{-1}x$
Law of Sines/Cosines
$$\int \sec x\,dx = \ln|\sec x + \tan x| + C$$
$$\int \csc x\,dx = -\ln|\csc x + \cot x| + C$$