* Disclaimer: I wrote the following 2 pages in the hope that they will be helpful and did my best to keep them correct but take the information as is. — if anything is not clear, ask me or refer to the back of the book. I can not be held responsible for the contents in this document.

(In particular I might have missed something although I have tried not to, to the best degree possible.)

But all the information in the following pages are very important for the midterm.

There are other equations/formulas required by the exam, the following is only the trig part.
Trigonometric Identities that you should know.

1. \[ \sin^2 x + \cos^2 x = 1. \]
   (Or: \( \sin^2 x = 1 - \cos^2 x \) \) \( \cos^2 x = 1 - \sin^2 x \) \) Conversions between \( \sin^2 x \) and \( \cos^2 x \).

2. \( \tan x \) is defined as \( \frac{\sin x}{\cos x} \) \( \sec x = \frac{1}{\cos x} \)
   (if you want to convert \( \tan x \) into \( \sin x \) and \( \cos x \) \) & \( \frac{1}{\sec x} \) into \( \cos x \).

3. \( \sec^2 x = 1 + \tan^2 x \)
   or \( \tan^2 x = \sec^2 x - 1 \) Conversion between \( \tan^2 x \) and \( \sec^2 x \).

4. \( \sin 0 = 0; \quad \sin \frac{\pi}{6} = \frac{1}{2}; \quad \sin \frac{\pi}{4} = \frac{\sqrt{2}}{2}; \quad \sin \frac{\pi}{3} = \frac{\sqrt{3}}{2}; \quad \sin \frac{\pi}{2} = 1. \)
   \( \cos 0 = 1; \quad \cos \frac{\pi}{6} = \frac{\sqrt{3}}{2}; \quad \cos \frac{\pi}{4} = \frac{\sqrt{2}}{2}; \quad \cos \frac{\pi}{3} = \frac{1}{2}; \quad \cos \frac{\pi}{2} = 0. \)

\[ \tan 0 = 0; \quad \tan \frac{\pi}{6} = \frac{\sqrt{3}}{3}; \quad \tan \frac{\pi}{4} = 1; \quad \tan \frac{\pi}{3} = \sqrt{3}; \]
\( \tan \) is not defined at \( \frac{\pi}{2} \).
\[
\frac{d}{dx}(\sin x) = \cos x \quad \text{and} \quad \int \sin x \, dx = -\cos x + C
\]

\[
\frac{d}{dx}(\cos x) = -\sin x \quad \text{and} \quad \int \cos x \, dx = \sin x + C
\]

\[
\frac{d}{dx}(\tan x) = \sec^2 x \quad \text{and} \quad \int \tan x \, dx = \ln |\sec x| + C
\]

\[
\frac{d}{dx}(\sec x) = \sec x \tan x \quad \text{and} \quad \int \sec x \, dx = \ln |\sec x + \tan x| + C
\]

\[
\int \sec x \tan x \, dx = \sec x + C
\]

(The derivative and integral of \(\cot x\) and \(\csc x\) will be given if needed)

\[
\sin^2 x = \frac{1}{2}(1 - \cos 2x) \quad \text{and} \quad \cos^2 x = \frac{1}{2}(1 + \cos 2x)
\]

(Try to remember them; but they will be given if needed)

\[
\text{REMEMBER THE STRATEGY ON BOOK PAGES P. 462 and P. 463, for } \int \sin^m x \cos^n x \, dx
\]

and \(\int \tan^m x \sec^n x \, dx\) respectively.

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