Formula sheet

MATH 105 midterm 2

Trigonometric formulas:

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

Simpson's rule:

$$S_n = \frac{\Delta x}{3}\Big(f(x_0) + 4f(x_1) + 2(x_2) + 4(x_3) + ... + 4f(x_{n-1}) + f(x_n)\Big).$$
$$E_s = \frac{K(b-a)(\Delta x)^4}{180}, \quad |f^{(4)}x| < K.$$

Integrals:

$$\int \sec x \, \mathrm{d}x = \ln\big|\sec x + \tan x\big| + C.$$

Probability:

$$\mathbb{E}[X] = \int_{-\infty}^{\infty} x f(x) \, \mathrm{d}x.$$
$$\mathrm{Var}[X] = \int_{-\infty}^{\infty} (x - \mathbb{E}[X])^2 f(x) \, \mathrm{d}x.$$