

MATH 153H SECTION 1
REVIEW FOR MIDTERM # 2

Find the following anti-derivatives (given in no particular order, but some are harder than the exam)

$$\int \frac{3 dx}{4x^2 + 4x + 2}$$

$$\int x \sin x dx$$

$$\int \ln \sqrt{x+1} dx$$

$$\int \sin^2 x \cos^2 x dx$$

$$\int \cos^{-1} x dx$$

$$\int \frac{x^3}{\sqrt{4+x^2}} dx$$

$$\int \frac{d\theta}{\sin \theta - \cos \theta + 1} d\theta$$

$$\int \frac{dx}{\sqrt{1+\sqrt{x}}}$$

$$\int (\sin^{-1} x)^2 dx$$

$$\int \frac{dx}{(x+1)(x+2)(x+3)}$$

$$\int \frac{y^3 + 2y^2 + 4}{y^3 + 4} dx$$

$$\int \frac{dx}{x(1+x^{\frac{1}{3}})}$$

$$\int \sin 2x \cos 3x dx$$

$$\int \frac{e^x}{5 - 6e^x + e^{2x}} dx$$

$$\int \frac{dx}{1+x^3}$$

$$\int e^{2x} \sin 3x dx$$

$$\int x^{100} \ln x dx$$

$$\int \frac{1}{\sqrt{x} + \sqrt{x-1}} dx$$

You wish to approximate the integral:

$$\int_1^3 \frac{1}{x^3} dx$$

To do so you wish to use the trapezoid rule to make an estimate to within 0.01. How many sub-intervals should you use?