

Math 34, Mathematica Exercises 1

First open your template notebook, and save a copy called homework3.nb. Make a title

Mathematica Exercises Your Name

Use Mathematica to perform each of the following computations. Save your notebook someplace so that you can refer to it again. Print your notebook and hand it in with the rest of your homework.

- (1) Add the following rational functions and express the answer over a common denominator, i.e. as a single fraction:

$$\frac{2}{3(-1+x)} + \frac{7(-10 - 10x - x^2 + 2x^3)}{3(5+x^4)}$$

- (2) Plot the function $f(x) = x^3 e^{-x}$ on an appropriate interval (so that all of the important features of the graph are displayed).
- (3) Solve $x^3 + 7x^2 - 2x + 8 = 0$.

- (4) Compute:

$$\frac{d}{dx} \left(\frac{\sin(x)(x^7 + 9x^2)}{x^5 + 4x^2 + 3} \right).$$

- (5) Compute:

$$\int \frac{1}{y^2(y-4)} dy$$

- (6) Compute:

$$\int t \sin(t) dt$$

- (7) Solve the IVP

$$y' = 2(1+t)(1+y^2), \quad y(0) = 0.$$