

Math 3280 Worksheet 14: the Wronskian and review questions

Group members (2 to 4): _____

- (1) Compute the Wronskian of the quadratic Bernstein polynomials $f_1 = x^2$, $f_2 = 2x(1 - x)$, $f_3 = (1 - x)^2$. What can you conclude about their linear independence?

(2) Compute the value of $y(1)$ if $\frac{dy}{dx} = 2xy^2$ and $y(0) = 2$.

- (3) Approximate $y(1)$ from the initial value problem in question (2) by using:
- (a) 1 step of Euler's method
 - (b) 1 step of the Improved Euler Method
 - (c) 2 steps of the Improved Euler Method
- Do these seem to be converging to the correct answer?