

ESO 208A; ESO 218

Computational methods in engineering

Tutorial # 8

October 17, 2013

1. Consider the following ODE with initial condition, $y=1$ at $x=0$.

$$\frac{dy}{dx} = -2x^3 + 12x^2 - 20x + 8.5$$

Determine y at $x = 4$.

- (a) Use analytical method.
- (b) Use Euler Method with $dx = 4$.
- (c) Use Euler Method with $dx = 2$.
- (d) Use 4th order Runge-Kutta method with $dx = 4$.
- (e) Calculate the error values wrt the true value.