

$$y''(t) + \sin(y(t)) = 0,$$

$$y(0) = 1,$$

$$y'(0) = 0$$

$$u_1 = 0.56790$$

$$u_2 = 0.30522 \approx y_2(1) = y'(1)$$

$$y(1) = y_1(1)$$

$$y_1 = y$$

$$y_2 = y'$$

$$y_2' = -\sin(y_1)$$

$$y_1' = y_2$$

APPLY R-K 4 METHOD

$$x'' + \varepsilon(x^2 - 1)x' + x = 0$$

$$u_1 = x$$

$$u_2 = x'$$

$$u_1' = u_2$$

$$u_2' = \varepsilon(1 - u_1^2)u_2 - u_1$$

$$x'' = \varepsilon(1 - x^2)x' - x$$