MAD 4401 QUIZ 2 FALL 2017 - JAMES KEESLING

Problem 1. Solve the differential equation equation using the Picard Method. What transformation of the problem is made to use the Picard Method.

$$\frac{dx}{dt} = t^3 \cdot x$$
$$x(0) = 1$$

Problem 2. Solve the differential equation using the Euler Method.

$$\frac{dx}{dt} = x$$
$$x(0) = 1$$

Use $h = 1/10$ and $n = 10$. Also use $h = 1/20$ and $n = 20$. What accuracy are you getting with the method?

Problem 3. Solve the above differential equation using the Heun Method with the same set of h's and n's. How do you answers compare.

Problem 4. Solve the differential equation using the Taylor Method.

$$\frac{dx}{dt} = x$$
$$x(0) = 1$$

Use $k = 2, 3, 4$ and $h = 1/10$ and $n = 10$. Also use $k = 2, 3, 4$ and $h = 1/20$ and $n = 20$. What accuracy are you getting with the method?