L18: class exercises – Try to implement/solve the following problems in MATLAB.

Polynomial evaluation

Evaluate the following polynomial over the range $x = [0, 4]$ using **polyval()** and plot your results on the same plot with a legend for each polynomial; the legend should be the equation of the polynomial. Also in the legend insert the order and name of the polynomial (e.g. order=0, constant equation).

$$y = 3.75x + 0.25$$
$$y = 5x + 7$$
$$y = 2x^2$$
$$y = 3x^3 + 2x^2 + x$$
$$y = x^7 + 3x - 3$$

Thoughts on polynomials

- Polynomials are easy to deal with in MATLAB
- As the order of the polynomial increases so does the complexity of the curve
- Remember the Taylor Series?
  - You can fit any function with an infinite series of polynomials
  - More polynomials = better fit
- **polyfit()** is similar to **polyval** except it fits a polynomial to data rather than creates a polynomial from given coefficients