1.
$$f(x) = -x^9 + 7x^3 - 2x - 8$$

Sketch **5 possible graphs** for this function. For each, state **the number of zeroes and turning points.**

2. **Compare** the key features of the graphs of the functions
$$f(x) = x$$
$$f(x) = x^2$$
$$f(x) = x^3$$
$$f(x) = x^3 + x^2$$
$$f(x) = x^3 + x$$

3. **Compare** the following two functions

$$f(x) = 2^{x+4} - 5$$
$$g(x) = x^4 - 5$$

4. Determine an **equation** for a **fifth-degree polynomial** function that **intersects the x-axis at only 5, 1, and -5**, and sketch the graph of the function.

5. Determine a polynomial function that can be used to model the function $f(x) = \sin x$ over the interval [0,2pi]

6. Determine the **symmetry** of $f(x) = x^4 - 4x^2$

7. **Compare** the key features of the graph of the families of rational functions of the form
$$f(x) = \frac{1}{x+n} \quad \text{and} \quad g(x) = \frac{1}{x^2-4}$$