

MA161 SEMESTER 1, CALCULUS: PROBLEM SHEET 3

1. Solve the following inequality:

$$3 + 4|2 - x| > 5.$$

2. For each of the following functions, determine if it is even, odd, or neither.

(a) $f(x) = 1 + x^2 + x^3$

(b) $f(x) = \frac{x^3 + 3x}{x^4 - 3x^2 + 4}$

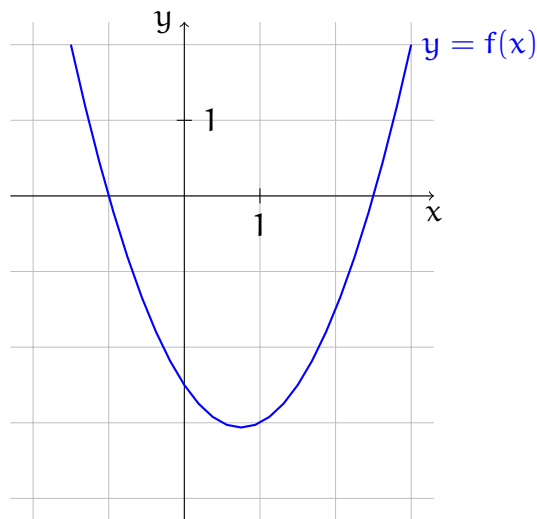
(c) $f(x) = |x + 5|$

(d) $f(x) = |x| + 5$

(e) $f(x) = x|x|$

(f) $f(x) = \frac{e^x - e^{-x}}{e^x + e^{-x}}$

3. Here is the graph of a quadratic polynomial $f(x)$. What is its equation?



4. A biologist estimates that there are currently 500 zebra mussels in Lough Corrib and that this number is doubling every year. Show that the population can be modelled as $P(t) = 500 \times 2^t$, where t is time in years, and $t = 0$ represents the current time.