

PC40S Graphing Polynomial Functions

1. Explain what is meant by a continuous graph?
2. Name a feature of the graph of $f(x) = |x|$ that is not shared by the graphs of polynomial functions.
3. Does the graph of $f(x) = 2x^4 - 3x$ rise or fall to the right? How can you tell? What happens to the left?
4. State the maximum number of turns in the following graphs:
 - a) $f(x) = x^3 - 4x$
 - b) $g(x) = x^6 - 4x^2$
 - c) $f(x) = -x^2 - 5x + 6$
 - d) $g(x) = x^5 - 4x^3 + 6$
 - e) $f(x) = -3x^4 - 5x + 6$
5. Determine the right and left behaviour of the following graphs:
 - a) $f(x) = -x^3 + 3x$
 - b) $f(x) = 2x^4 - 5x^2 + 4$
 - c) $f(x) = (x - 1)(x + 3)(x - 1)$
 - d) $f(x) = -x^4 + x^2$
 - e) $f(x) = -2x^5 + x^4 - 2x$
 - e) $f(x) = 3x^5 + x^3 - 2$
6. Find i) the zeros of the following functions, ii) the number of terms, iii) left-right behaviour, iv) sketch the graph of the function, and v) the maximum and/or minimum values.
 - a) $f(x) = x^3 - x^2 - 6x$
 - b) $f(x) = -x^3 + 4x$
 - c) $f(x) = x^4 - 2x^3 - 3x^2 + 4x + 4$
 - d) $f(x) = -x^5 - 2$
 - e) $f(x) = (x - 4)^3$
 - f) $f(x) = x^3 + 5x^2 + 2x - 8$