3.1 Polynomials

Polynomial functions: a function of the form

f(x) = a­­nxn + an-1xn-1 + an-2xn-2+ …. + a2x2 + a1x+ a0,

where n is a whole number and the coefficients an to a0 are real numbers.

Ex f(x) = 3x5+ 5x2 – 3x +1

End behaviours: The tendency of the (y values) of a function as the value of x tends toward

Degree: A sort of measurement of the “size” of a polynomial function. For single variable functions it is the highest exponent on the variable.

Ex: 1 Which of the following are polynomial functions? Why? If it is, state the degree, leading coefficient, and the constant term.

a) b) f(x) = 3x4 c) d)

Degree 0: Constant function – (even degree)

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| Example:    End behaviours:  Domain:  Range:  Number of possible x int: | Example:    End behaviours:  Domain:  Range:  Number of possible x int: |

Degree 1: Linear Function - (odd degree)

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| Example:    End behaviours:  Domain:  Range:  Number of possible x int: | Example:    End behaviours:  Domain:  Range:  Number of possible x int: |

Degree 2: Quadratic Function - (even degree)

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| Example:    End behaviours:  Domain:  Range:  Number of possible x int: | Example:    End behaviours:  Domain:  Range:  Number of possible x int: |

Degree 3: Cubic Function - (odd degree)

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| Example:    End behaviours:  Domain:  Range:  Number of possible x int: | Example:    End behaviours:  Domain:  Range:  Number of possible x int: |

Degree 4: Quartic Function - (even degree)

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| Example:    End behaviours:  Domain:  Range:  Number of possible x int: | Example:    End behaviours:  Domain:  Range:  Number of possible x int: |

Degree 5: Quintic Function - (odd degree)

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| Example:    End behaviours:  Domain:  Range:  Number of possible x int: | Example:    End behaviours:  Domain:  Range:  Number of possible x int: |

Ex: 2 Identify the characteristics of the graph of each polynomial function.

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| Function | Degree odd  Or  even | End  behaviour | Possible  x-int | Max/Min | y-int |
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Go over example 2 in text, page 110