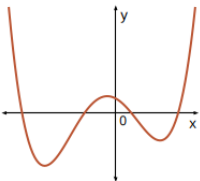
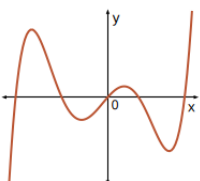
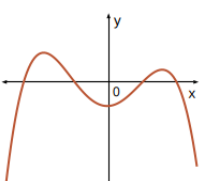
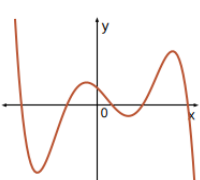
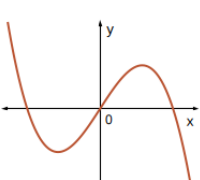


1.2 Characteristics of Polynomial Functions Worksheet

This document was composed and formatted by Annie Bernatchez.

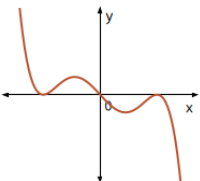
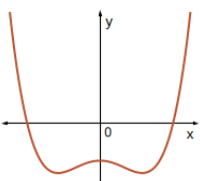
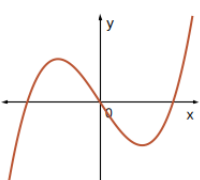
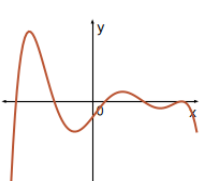
The course material originated from www.jensenmath.ca

1) Complete the following table

Graph	Sign of Leading Coefficient	Even or Odd Degree?	End Behaviour	Symmetry	Number of turning points	Number of x-intercepts	Least Possible Degree
							
							
							
							
							

2) Complete the following table

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Graph	Sign of Leading Coefficient	Even or Odd Degree?	End Behaviour	Symmetry	Number of turning points	Number of x-intercepts	Least Possible Degree
							
							
							
							

3) Complete the following table

Equation	Degree	Sign of Leading Coefficient	Even or Odd Degree?	End Behaviour	Possible number of turning points	Possible number of x-intercepts
$f(x) = -4x^4 + 3x^2 - 15x + 5$						
$g(x) = 2x^5 - 4x^3 + 10x^2 - 13x + 8$						
$p(x) = 4 - 5x + 4x^2 - 3x^3$						
$h(x) = 2x(x - 5)(3x + 2)(4x - 3)$						

4) Use end behaviours, turning points, and zeros to match each equation with the most likely graph. Write the letter of the equation beneath the graph.

A) $y = 2x^3 - 4x^2 + 3x + 2$

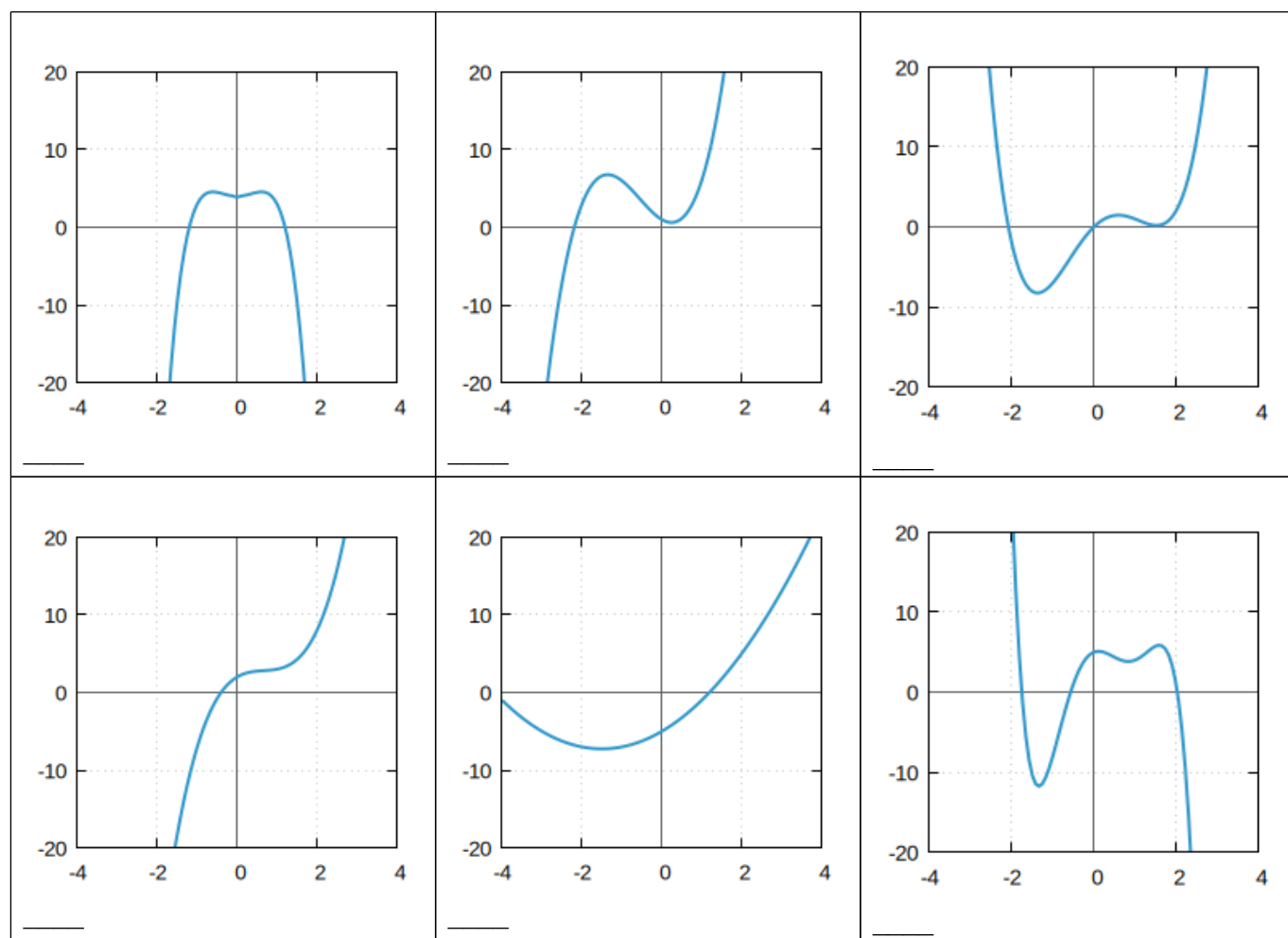
B) $y = -4x^4 + 3x^2 + 4$

C) $y = x^2 + 3x - 5$

D) $y = x^4 - x^3 - 4x^2 + 5x$

E) $y = -2x^5 + 3x^4 + 6x^3 - 10x^2 + 2x + 5$

F) $y = 3x^3 + 5x^2 - 3x + 1$



5) State the degree of the polynomial function that corresponds to each constant finite difference. Then determine the value of the leading coefficient for each polynomial function.

a) second differences = -8

b) fourth differences = 24

6) Use finite differences to determine the degree and value of the leading coefficient for each polynomial function.

a)

x	y	First differences	Second differences	Third differences
-3	-45	N/A	N/A	N/A
-2	-16		N/A	N/A
-1	-3			N/A
0	0			
1	-1			
2	0			
3	9			
4	32			

b)

x	y	First differences	Second differences	Third differences	Fourth differences
-2	-40	N/A	N/A	N/A	N/A
-1	12		N/A	N/A	N/A
0	20			N/A	N/A
1	26				N/A
2	48				
3	80				
4	92				
5	30				

7) By analyzing the impact of growing economic conditions, a demographer establishes that the predicted population, P , of a town t years from now can be modelled by the function

$$P(t) = 6t^4 - 5t^3 + 200t + 12000$$

a) What is the value of the constant finite differences?

b) What is the current population of the town?

c) What will the population of the town be 10 years from now?

Answer Key

4) Top row: B, F, D. Bottom row: A, C, E.

5) a) degree 2, $a = -4$ b) degree 4, $a = 1$

6) a) degree 3, $a = 1$ b) degree 4, $a = -1$

7) a) 144 b) 12 000 c) 69 000