MHF4U Name:_____

Date: _____

Investigating End Behaviour and Turning Points

Complete the following table for each of the given equations.

a) $f(x) = 9x^2 - 8x - 2$
b) $f(x) = -x^4 - 3x^3 + 3x^2 + 8x + 5$
c) $f(x) = 2x^6 - 13x^4 + 15x^2 + x - 17$
d) $f(x) = -2x^4 - 4x^3 + 3x^2 + 6x + 9$
e) $f(x) = x^3 - 5x^2 + 3x + 4$
f) $f(x) = 2x^5 + 7x^4 - 3x^3 - 18x^2 - 20$
g) $f(x) = -x^7 + 8x^5 - 16x^3 + 8x$
h) $f(x) = -2x^3 + 8x^2 - 5x + 3$

Function	Degree	# of Turning Points	Sign of Leading Coefficient	Even or Odd Degree?	End Behaviour as $x \to \infty$	End Behaviour as $x \to -\infty$
a						
b						
c						
d						
e						
f						
g						
h						

Make a conjecture about the maximum number of turning points in the graph of a polynomial function with degree 8, 9 or n.

Make a conjecture about the end behaviour of a function with a degree that is

a) even

b) odd

Make a conjecture about the end behaviour of a function with a degree that is

a) even and has a positive leading coefficient

b) even and has a negative leading coefficient

c) odd and has a positive leading coefficient

d) odd and has a negative leading coefficient