

**Advanced Precalculus**  
**Exploration of Polynomials**

Name: \_\_\_\_\_

Function	Window	Degree	Graph (Sketch)	# Max	# Min	# Turning Points	End Behavior
$f(x) = 4x^2 - 3x - 7$	X[-10,10]; Y[-10, 10]						
$f(x) = -3x^2 + 4x + 5$	X[-10,10]; Y[-10, 10]						
$f(x) = x^3 - 3x^2 + 3x + 1$	X[-10,10]; Y[-10, 10]						
$f(x) = -x^3 - 9x^2 - 27x - 24$	X[-10,10]; Y[-10, 10]						
$f(x) = 2x^3 - 5x^2 + x - 4$	X[-10,10]; Y[-10, 10]						
$f(x) = -4x^3 + 36x^2 + 792x - 2592$	X[-20,25]; Y[-8000, 8000]						
$f(x) = x^4 + 4x^3 + 6x^2 + 4x - 2$	X[-10,10]; Y[-10, 10]						
$f(x) = -x^4 - 20x^3 - 150x^2 - 500x - 620$	X[-10,10]; Y[-10, 10]						
$f(x) = -2x^4 + 18x^3 - 12x^2 - 32x$	X[-10,10]; Y[-300, 800]						
$f(x) = x^4 - 16x^3 + 86x^2 - 176x + 105$	X[-10,10]; Y[-30, 30]						
$f(x) = x^5 - 5x^4 - 10x^3 + 50x^2 - 19x - 45$	X[-10,10]; Y[-200, 200]						

## Two Results of Exploration...

### 1.) End Behavior vs Degree

When the Polynomial has EVEN degree

with POSITIVE coefficient:

with NEGATIVE coefficient:

When the Polynomial has ODD degree

with POSITIVE coefficient:

with NEGATIVE coefficient:

### 2.) Number of Turning Points