Name: _____ Hour: _____ Date: _____

End Behavior of Polynomials Introduction/Discovery

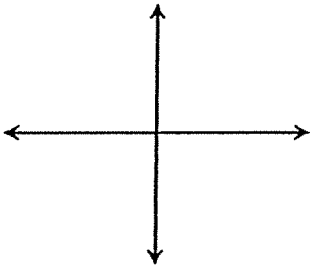
In Unit 2 we learned about using end behavior to describe what happens on both sides of a function. We're going to use what you already know to try to come up with a rule to describe the end behavior of any polynomial.

DIRECTIONS: (1) If necessary, rewrite each function in standard form
(2) Classify the polynomial by a)degree and b)number of terms
(3) Graph the polynomial in your calculator and make a rough sketch on your paper
(4) Describe the end behavior of the polynomial
(5) Record the lead coefficient and degree of each polynomial

1) $f(x) = 2x^3+x^2 - 5$

STANDARD FORM:

CLASSIFICATION: a)
b)



END BEHAVIOR:

Left: As x → _____
y→ _____

Right: As x → _____
y→ _____

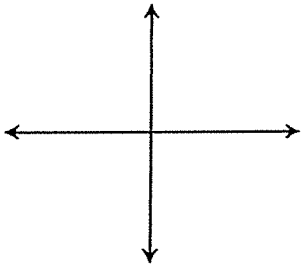
Lead Coefficient: POSITIVE or NEGATIVE

Degree: EVEN or ODD

2) $f(x) = x^6 + 4x^2 + 3x - 1$

STANDARD FORM:

CLASSIFICATION: a)
b)



END BEHAVIOR:

Left: As x → _____
y→ _____

Right: As x → _____
y→ _____

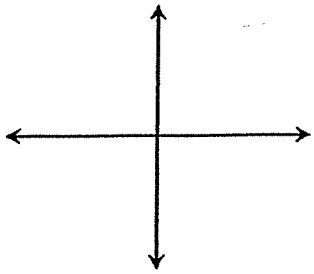
Lead Coefficient: POSITIVE or NEGATIVE

Degree: EVEN or ODD

3) $f(x) = x^7 + 3x^2 - 2x$

STANDARD FORM:

CLASSIFICATION: a)
b)



END BEHAVIOR:

Left: As x → _____
y→ _____

Right: As x → _____
y→ _____

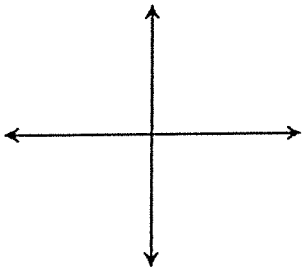
Lead Coefficient: POSITIVE or NEGATIVE

Degree: EVEN or ODD

4) $f(x) = -x^3 - 8x^5 - 2x - 2$

STANDARD FORM:

CLASSIFICATION: a)
b)



END BEHAVIOR:

Left: As x → _____
y→ _____

Right: As x → _____
y→ _____

Lead Coefficient: POSITIVE or NEGATIVE

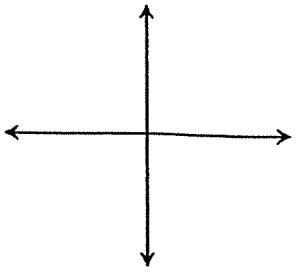
Degree: EVEN or ODD

5) $f(x) = 5 - x^3 - x^2$

STANDARD FORM:

CLASSIFICATION: a)

b)



END BEHAVIOR:

Left: As x → ____

y→ ____

Right: As x → ____

y→ ____

Lead Coefficient: POSITIVE or NEGATIVE

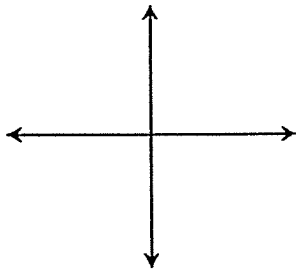
Degree: EVEN or ODD

6) $f(x) = x^2 - 3x^4 - 2x - 2$

STANDARD FORM:

CLASSIFICATION: a)

b)



END BEHAVIOR:

Left: As x → ____

y→ ____

Right: As x → ____

y→ ____

Lead Coefficient: POSITIVE or NEGATIVE

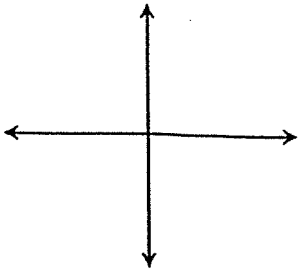
Degree: EVEN or ODD

7) $f(x) = -2x^6 + 4x$

STANDARD FORM:

CLASSIFICATION: a)

b)



END BEHAVIOR:

Left: As x → ____

y→ ____

Right: As x → ____

y→ ____

Lead Coefficient: POSITIVE or NEGATIVE

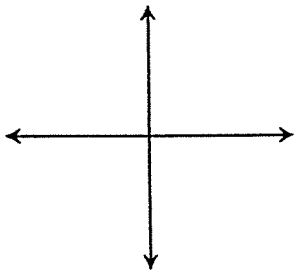
Degree: EVEN or ODD

8) $f(x) = -7 + x^2 + 6x^4$

STANDARD FORM:

CLASSIFICATION: a)

b)



END BEHAVIOR:

Left: As x → ____

y→ ____

Right: As x → ____

y→ ____

Lead Coefficient: POSITIVE or NEGATIVE

Degree: EVEN or ODD

Look at the end behaviors that you recorded above. Describe the patterns that you see between the **end behavior**, the **lead coefficient** and the **degree** of each polynomial.