Algebra 2B - Polynomial Function Lab **Name** _____

Goal: Analyze polynomial functions to describe end of behavior
Utilize Desmos graphing calculator

Example : (Use Desmos Graphing Calculator) ____

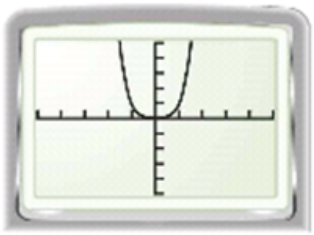
EXPLORE Investigate the end behavior of $f(x) = \pm x^n$ where n is even

Graph the function. Describe the end behavior of the graph.

a. $f(x) = x^4$ **b.** $f(x) = -x^4$

STEP 1 ***Graph functions*** Graph each function on a graphing calculator.

a.



b.

Make a Chart to summarize the end behavior of each function

Function	As x approaches $-\infty$	As x approaches $+\infty$
a. $f(x) = x^4$	$f(x)$ approaches $+\infty$	$f(x)$ approaches $+\infty$
b. $f(x) = -x^4$	$f(x)$ approaches $-\infty$	$f(x)$ approaches $-\infty$

Part 1 Instructions: Graph each of the following functions and draw a rough sketch of the graph. For each function construct a table as shown above to describe and record the end behavior of each function graph.

c) $f(x) = x^5$ d) $f(x) = -x^5$ e) $f(x) = x^6$ f) $f(x) = -x^6$

Part 2 Instruction: Make a conclusion about the end behavior of each family of functions below. Verify your results using Desmos graphing app.

a. $f(x) = x^n$ where n is odd **b.** $f(x) = -x^n$ where n is odd

c. $f(x) = x^n$ where n is even **d.** $f(x) = -x^n$ where n is even