## Unit 2 Lesson 8: End Behavior (Part 1)

### 1 Notice and Wonder: A Different View (Warm up)

#### Student Task Statement

What do you notice? What do you wonder?

$y=x^{3}+4x^{2}−x−4$



$y=x^{4}−10x^{2}+9$



### 2 Polynomial End Behavior

#### Student Task Statement

1. For your assigned polynomial, complete the column for the different values of $x$. Discuss with your group what you notice.

| * $x$
 | * $y=x^{2}+1$
 | * $y=x^{3}+1$
 | * $y=x^{4}+1$
 | * $y=x^{5}+1$
 |
| --- | --- | --- | --- | --- |
| * -1000
 |  |  |  |  |
| * -100
 |  |  |  |  |
| * -10
 |  |  |  |  |
| * -1
 |  |  |  |  |
| * 1
 |  |  |  |  |
| * 10
 |  |  |  |  |
| * 100
 |  |  |  |  |
| * 1000
 |  |  |  |  |

1. Sketch what you think the **end behavior** of your polynomial looks like, then check your work using graphing technology.

### 3 Two Polynomial Equations

#### Student Task Statement

Consider the polynomial $y=2x^{5}−5x^{4}−30x^{3}+5x^{2}+88x+60$.

1. Identify the degree of the polynomial.
2. Which of the 6 terms, $2x^{5}$, $5x^{4}$, $30x^{3}$, $5x^{2}$, $88x$, or $60$, is greatest when:
	1. $x=0$
	2. $x=1$
	3. $x=3$
	4. $x=5$
3. Describe the end behavior of the polynomial.



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