p326 13-22, 35-40, 47-50 Key

(13) Not one variable

(14) Not polynomial because of negative exponent

(15) Degree = 6 LC = -12

(16) Degree = 7 LC = -21

(17) Degree = 4 LC = -5

(18) Degree = 5 LC = 3

(19) $(d+5)(3d-4)$
$3d^2-4d+15d-20$
$3d^2+11d-20$
Degree = 2 LC = 3

(20) $(5-2y)(4+3y)$
$20+15y-8y-6y^2$
$20+7y-6y^2$
Degree = 2 LC = -6

(21) Degree = 9 LC = 2

(22) Degree = 8 LC = -2

(35) (a) $f(x) \to +\infty$ as $x \to -\infty$,
$f(x) \to +\infty$ as $x \to +\infty$
(b) Even Degree
(c) 4 zeros

(36) (a) $f(x) \to +\infty$ as $x \to -\infty$,
$f(x) \to -\infty$ as $x \to +\infty$
(b) Odd
(c) 1 zero

(37) (a) $f(x) \to -\infty$ as $x \to -\infty$,
$f(x) \to +\infty$ as $x \to +\infty$
(b) Odd
(c) 1 zero

(38) (a) $f(x) \to +\infty$ as $x \to -\infty$,
$f(x) \to +\infty$ as $x \to +\infty$
(b) Even
(c) No zeros

(39) (a) $f(x) \to -\infty$ as $x \to -\infty$,
$f(x) \to -\infty$ as $x \to +\infty$
(b) Even
(c) 2 zeros

(40) (a) $f(x) \to -\infty$ as $x \to -\infty$,
$f(x) \to -\infty$ as $x \to +\infty$
(b) Even
(c) 2 zeros

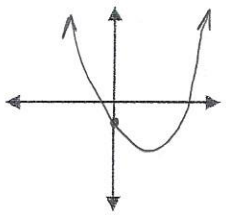
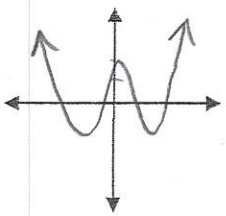
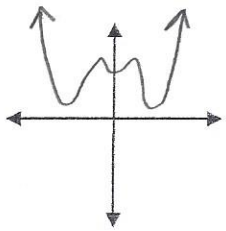
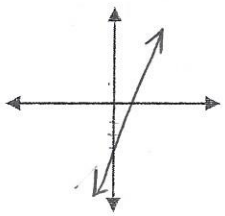
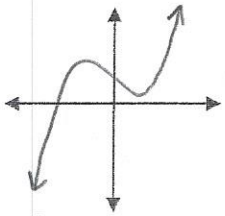
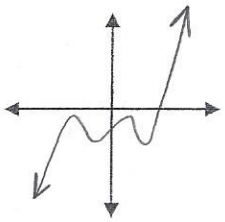
(47) D (48) B (49) A (50) C

Name Key Period: Date:

Math Lab: Investigating End Behavior in Polynomials

Question: What can the degree and leading coefficient of a polynomial tell you about its graph?

Use a graphing calculator to make a rough sketch of each polynomial. For each, give the degree and sign of the leading coefficient.

$y = x^2 - 3x - 1$  Degree: 2 Sign of LC: +	$y = x^4 - 4x^2 + 2$  Degree: 4 Sign of LC: +	$y = x^6 - 4x^4 + 2x^2 + 6$  Degree: 6 Sign of LC: +
$y = 2x - 3$  Degree: 1 Sign of LC: +	$y = x^3 - 2x + 2$  Degree: 3 Sign of LC: +	$y = x^5 - 3x^3 + 2x - 1$  Degree: 5 Sign of LC: +

1. Describe the end behavior of the graph of a polynomial with an **EVEN DEGREE** and **POSITIVE LEADING COEFFICIENT**.

   As x approaches negative infinity, y approaches $+\infty$.

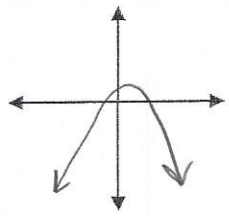
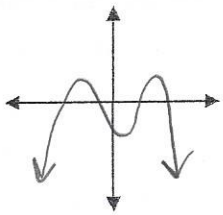
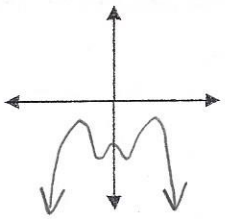
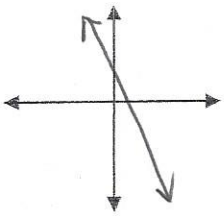
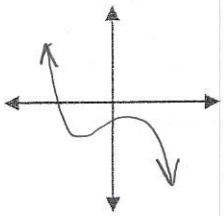
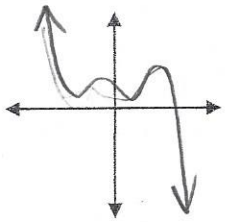
   As x approaches positive infinity, y approaches $+\infty$.

2. Describe the end behavior of the graph of a polynomial with an **ODD DEGREE** and **POSITIVE LEADING COEFFICIENT**.

   As x approaches negative infinity, y approaches $-\infty$.

   As x approaches positive infinity, y approaches $+\infty$.

Use a graphing calculator to make a rough sketch of each polynomial.

$y = -x^2 + 3x + 1$  Degree: 2 Sign of LC: −	$y = -x^4 + 4x^2 - 2$  Degree: 4 Sign of LC: −	$y = -x^6 + 4x^4 - 2x^2 - 6$  Degree: 6 Sign of LC: −
$y = -2x + 3$  Degree: 1 Sign of LC: −	$y = -x^3 + 2x - 2$  Degree: 3 Sign of LC: −	$y = -x^5 + 3x^3 - 2x + 1$  Degree: 5 Sign of LC: −

3. Describe the end behavior of the graph of a polynomial with an **EVEN DEGREE** and **NEGATIVE LEADING COEFFICIENT**.

As x approaches negative infinity, y approaches $-\infty$.

As x approaches positive infinity, y approaches $-\infty$.

4. Describe the end behavior of the graph of a polynomial with an **ODD DEGREE** and **NEGATIVE LEADING COEFFICIENT**.

As x approaches negative infinity, y approaches $+\infty$.

As x approaches positive infinity, y approaches $-\infty$.