

Objective: SWBAT find key features of polynomials.

Kickoff- Determine algebraically if the functions are even, odd or neither.

1)  $h(x) = x^2 + 1$

$h(-x) = (-x)^2 + 1$

even  $x^2 + 1$

2)  $g(x) = x^3 - x$

$g(-x) = (-x)^3 + (-x)$

$g(-x) = -x^3 - x$

odd

3)  $f(x) = x^3 - 1$

$f(-x) = (-x)^3 - 1$

$f(-x) = -x^3 - 1$

Neither

HW

1)  $g(x) = x^2 + 18$

$g(-x) = (-x)^2 + 18$

$= x^2 + 18$

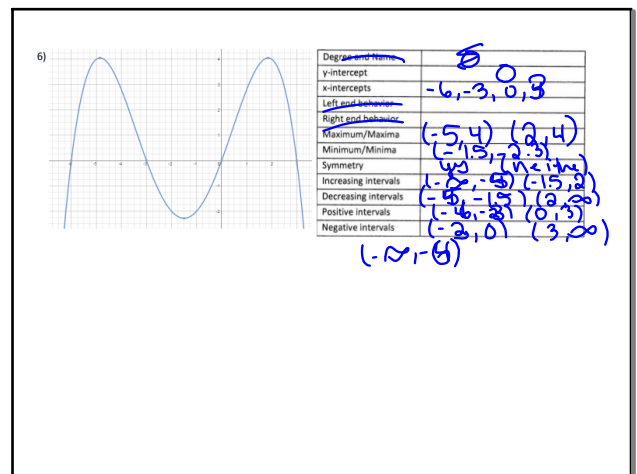
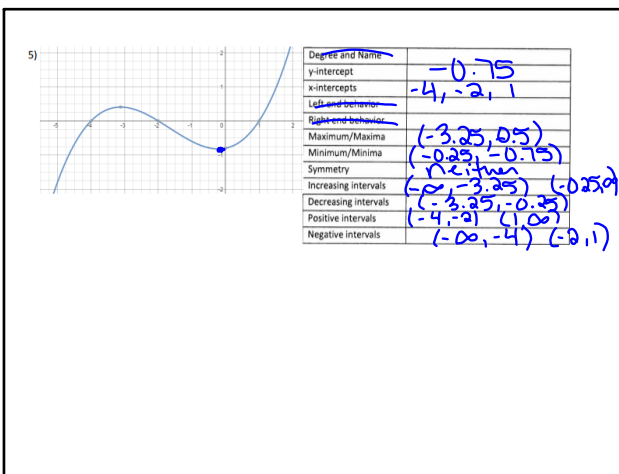
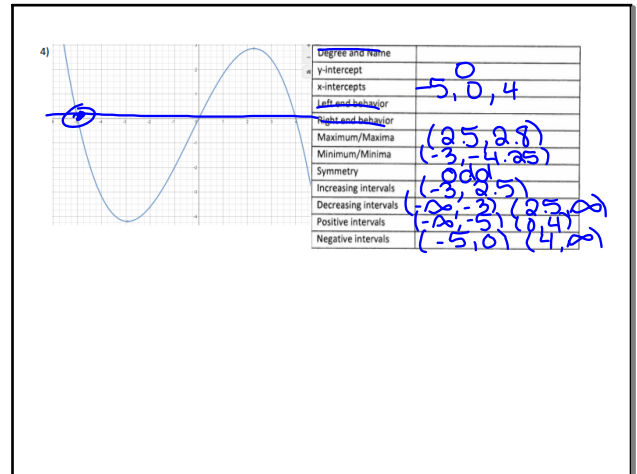
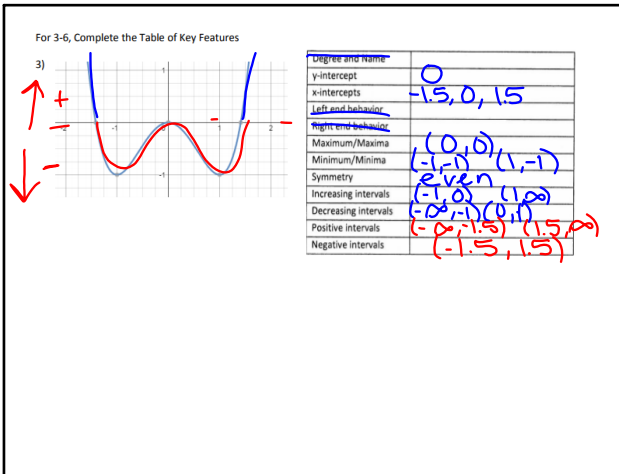
even

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

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

$= -x^3 + 2x^2 + x$

Neither



On 7-10, Estimate the Maximum and/or Minimum for each graph.  
 a) State the Max/Min Value (y-value) b) the location of each Max/Min (x-value)

10)

11)

12)

13)

Key Features	
End Behavior	Degree is <del>3</del>
Domain	Leading Coefficient is <del>1</del>
Range	$\mathbb{R}$
Increasing	$(-2, 2)$ $(5, \infty)$
Decreasing	$(2, 5)$
Roots	$-2, 4$
x-intercept(s)	$-2, 4$
y-intercept(s)	$-2.5$
Relative Maximum(s)	$(-2, 4)$
Relative Minimum(s)	$(2, -2.5)$
Odd/Even/Neither	Neither

Key Features	
End Behavior	Degree is <del>3</del>
Domain	Leading Coefficient is <del>1</del>
Range	$\mathbb{R}$
Increasing	$(-3.5, -1.5)$ $(0.2, 2.5)$ $(4.5, \infty)$
Decreasing	$(-1.5, 0)$ $(2.5, 4.5)$
Roots	$-4, -2, 1.5, 3.5$
x-intercept(s)	$-4, -2, 1.5, 3.5$
y-intercept(s)	$-7.5$
Relative Maximum(s)	$(2.25, 2.5)$
Relative Minimum(s)	$(-3.5, -4)$ $(0.2, -1.5)$ $(4.5, 1)$
Odd/Even/Neither	neither

Key Features	
End Behavior	Degree is <del>3</del>
Domain	Leading Coefficient is <del>1</del>
Range	$\mathbb{R}$
Increasing	$(-2.5, -1.5)$ $(5, 5)$ $(1.5, 1.5)$
Decreasing	$(-1.5, -2.5)$ $(1.5, -5)$ $(5, 1.5)$ $(2.5, 2.5)$
Roots	$-3, -2, -1, 0, 1, 2, 3$
x-intercept(s)	$-3, -2, -1, 0, 1, 2, 3$
y-intercept(s)	$0$
Relative Maximum(s)	$(-1.5, 5)$ $(5, 2.5)$ $(2.5, 2)$
Relative Minimum(s)	$(-2.5, -2)$ $(-5, -2.5)$ $(1.5, -5)$
Odd/Even/Neither	odd