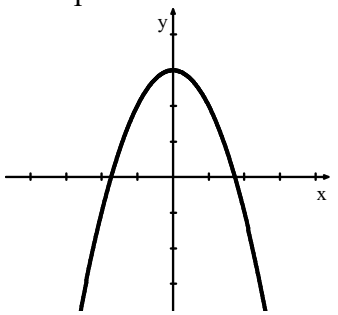
AP Precalc

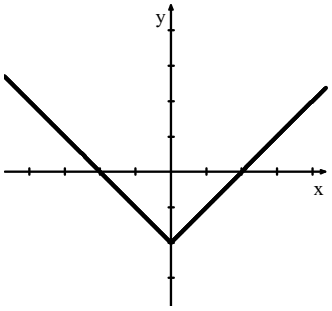
Write your questions and thoughts here!

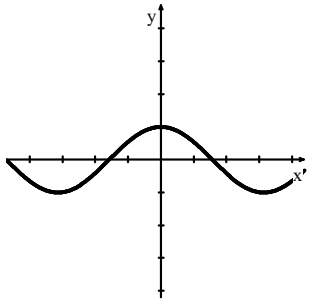
1.5B Even and Odd Polynomials

1.5B Notes

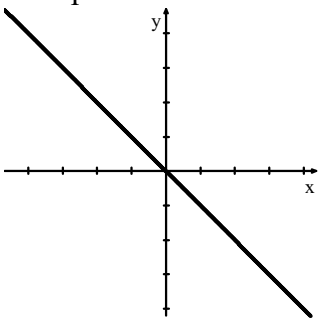
_____ functions are symmetrical over the _____. The following graphs are examples.

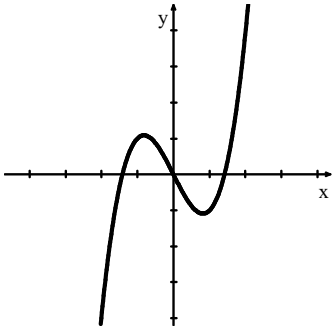


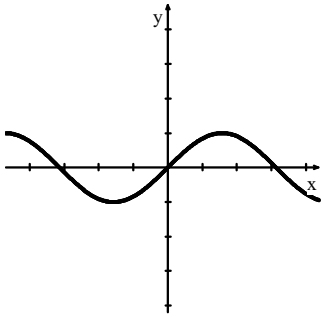




_____ functions are symmetrical over the _____. The following graphs are examples.

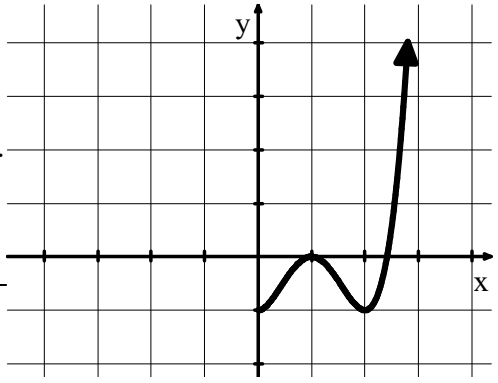






An EVEN Function…

- is graphically symmetric over the line $x = 0$.
- analytically has the property _____



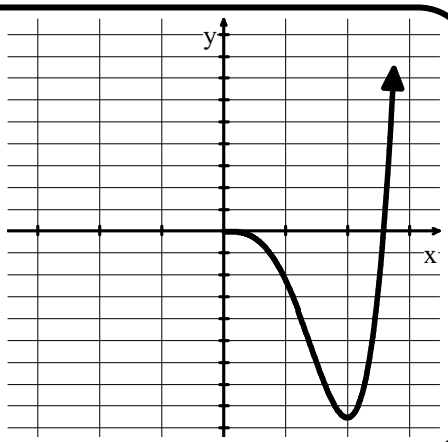
You can prove that a function is even by substituting in $-x$ and see if you get the _____ original function.

1. Show analytically that $f(x) = x^6 - 4x^2$ is an even function.

Write your questions and thoughts here!

An ODD Function…

- is graphically symmetric over the point $(0,0)$.
- analytically has the property _____



You can prove that a function is odd by substituting in $-\boldsymbol{x}$ and see if you get the _____ of the original function.

2. Show analytically that $f(x) = -2x^3 + 5x$ is an odd function.

3. Show analytically if $f(x) = 6x^4 - 2x$ is even, odd, or neither.

Shortcut for simple polynomial form

Let p be a polynomial of the form $p(x) = a_n x^n$, where $n \geq 1$ and $a_n \neq 0$.

- If n is even, then p is an even function.
- If n is odd, then p is an odd function.

If you see one of these in the practice, you can just state that it is an odd or even function without having to go through all the analytical work!

State if the following functions are odd or even.		
4. $f(x) = -10x^3$	5. $f(x) = 7x^4$	6. $f(x) = -3x^6$

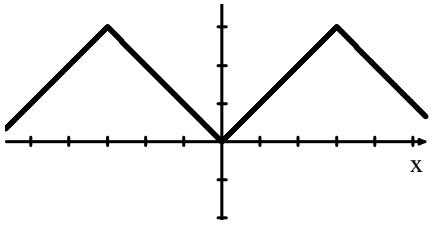
1.5B Even and Odd Polynomials

AP Precalculus

1.5B Practice

State whether the following graphs represent functions that are even, odd, or neither.

1.



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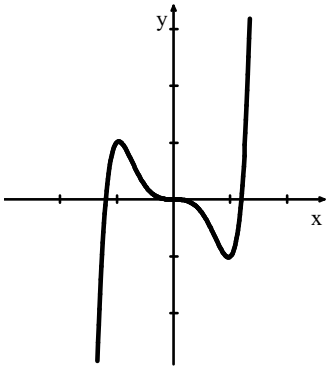
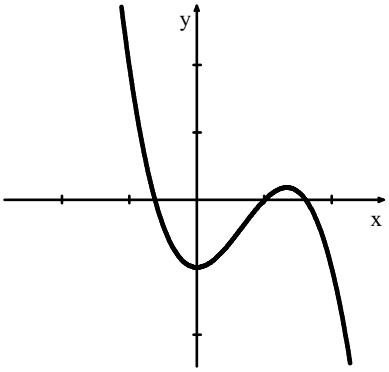
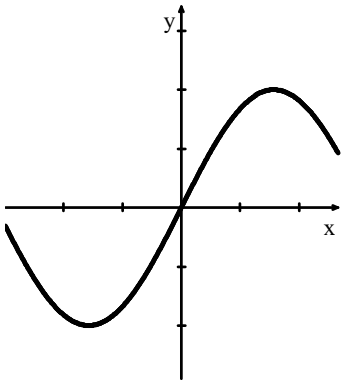


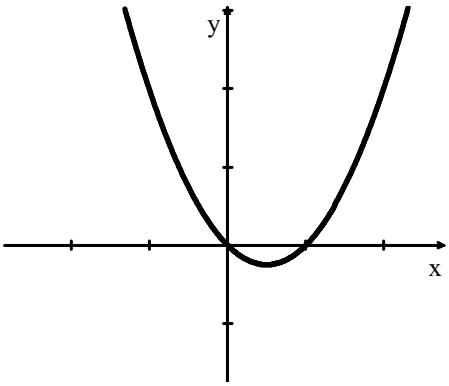
3.



4.



5.



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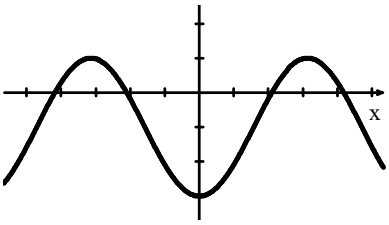

State if the following functions are even, odd, or neither.

7. $f(x) = x^3 + x$

8. $g(x) = x^4 + 3x^2$

9. $h(x) = -7x^6$

10. $w(t) = 8t^5 + 2t$

11. $a(w) = 1 - w - w^3$

12. $f(x) = 2x^{10} + x^6 - 7x^2 - 2$

13. $h(t) = 4t^9$

14. $g(x) = x^2 + x - 3$

15. $b(x) = -4x^7 + x^3 - x$

16. Is $f(x) = 7x^6 - x^4 + 5$ even, odd, or neither

1.5B Even and Odd Polynomials

1.5B Test Prep

17. Certain values of $g(x)$ are given in the table below. Given that $g(x)$ is odd, fill in the missing values of the table.

x	$g(x)$
-5	10.5
7	
	-38.5
-7	22.5
5	
9	38.5

18. Given that $h(x)$ is continuous on $-5 \leq x \leq 5$ and odd, draw the graph $h(x)$ from $-5 \leq x \leq 0$.