

Name Schlansky
Mr. Schlansky

Even
 $f(x) = f(-x)$
Symmetric to
the y-axis
(y-axis cuts
graph in half)

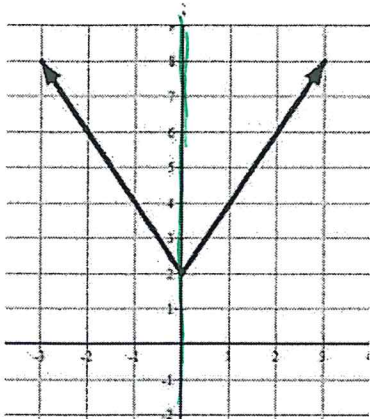
Odd
 $f(-x) = -f(x)$
Symmetric to
the origin
(turn upside down
and image is the same)

Date _____
Algebra II

Even and Odd Functions

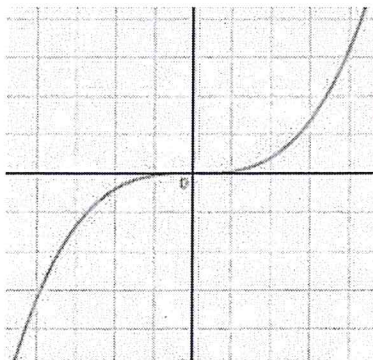
Determine graphically whether the following functions are even, odd, or neither

1.



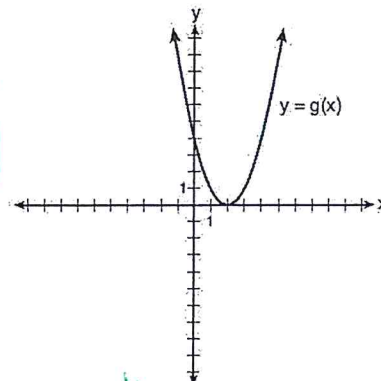
even because it's symmetric
to the y-axis

2.



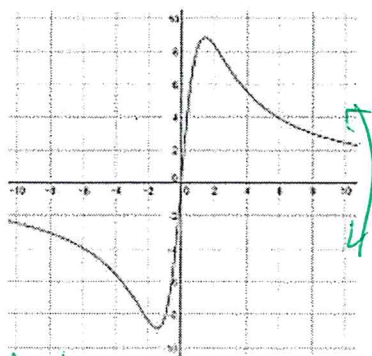
odd because it's symmetric
to the origin

3.



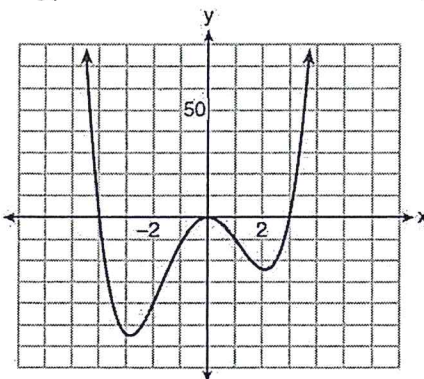
neither

4.



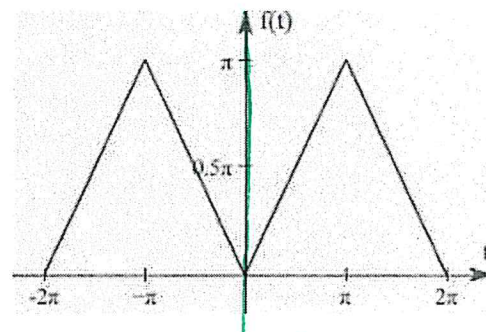
odd because it's symmetric
to the origin

5.



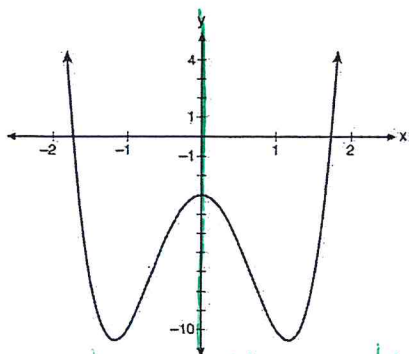
neither

6.



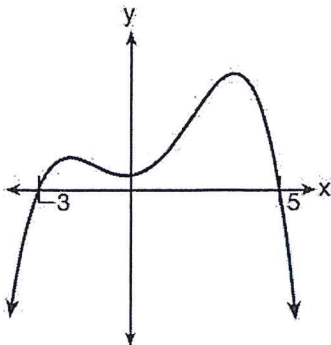
even because it's symmetric
to the y-axis

7.



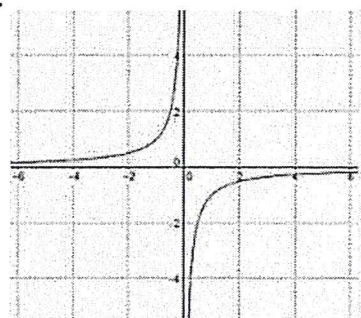
even because it's symmetric
to the y-axis

8.



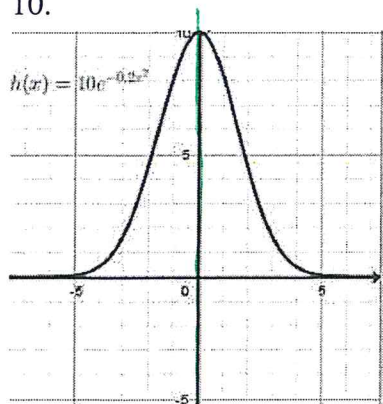
neither

9.



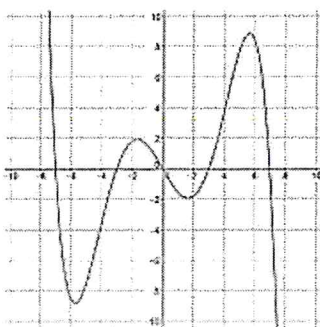
odd because it's
symmetric to the
origin

10.



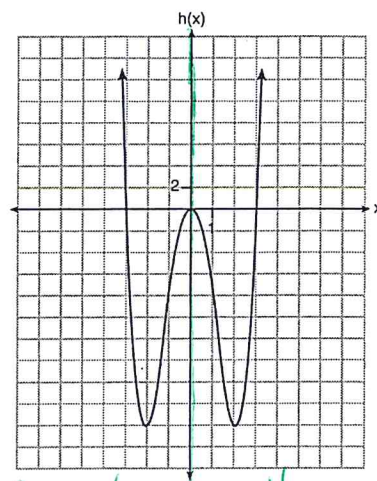
even because it's symmetric to the y-axis

11.



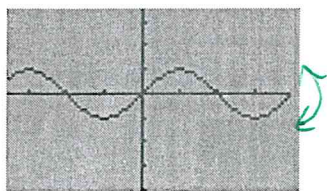
odd because it's symmetric to the origin

12.



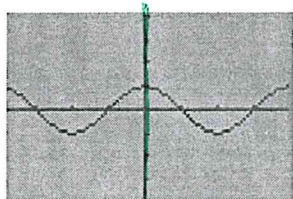
even because it's symmetric to the y-axis

13.



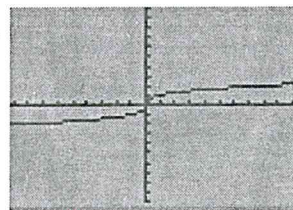
odd because it's symmetric to the origin

14.



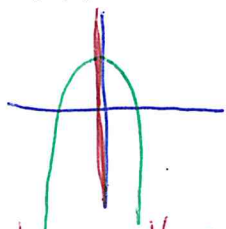
even because it's symmetric to the y-axis

15.



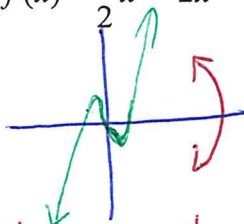
odd because it's symmetric to the origin

16. $f(x) = -x^4 + 4$



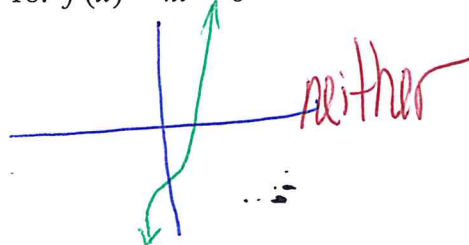
even because it's symmetric to the y-axis

17. $f(x) = \frac{1}{2}x^5 - 2x$



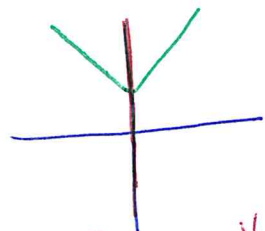
odd because it's symmetric to the origin

18. $f(x) = 4x^3 - 6$



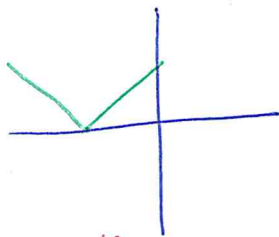
neither

19. $f(x) = |x| + 4$



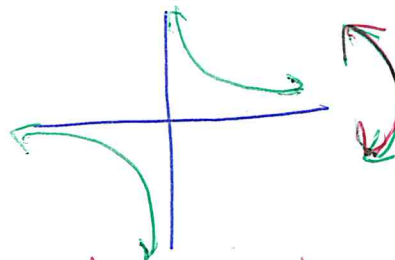
even because it's symmetric to the y-axis

20. $f(x) = |x + 4|$



neither

21. $f(x) = \frac{10}{x}$



odd because it's symmetric to the origin

Type into y=

Substitute $-x$
if everything is the same:
even, $f(x) = f(-x)$

Determine algebraically whether the following functions are even, odd, or neither

22. $f(x) = x^2$

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

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

even because $f(x) = f(-x)$
(the signs are the same)

if everything is negated:
odd, $f(-x) = -f(x)$

negative to an even power is +
negative to an odd power is -

23. $f(x) = x^3$

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

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

odd because $f(-x) = -f(x)$
(the signs are opposite)

24. $f(x) = -6x^3 - 8x$

$$f(-x) = -6(-x)^3 - 8(-x)$$

$$f(-x) = 6x^3 + 8x$$

odd because $f(-x) = -f(x)$
(the signs are opposite)

25. $f(x) = 3x^8 - 4x^2$

$$f(-x) = 3(-x)^8 - 4(-x)^2$$

$$f(-x) = 3x^8 - 4x^2$$

even because $f(x) = f(-x)$
(the signs are the same)

26. $f(x) = x^4 + 3$

$$f(-x) = (-x)^4 + 3$$

$$f(-x) = x^4 + 3$$

even because $f(x) = f(-x)$
(the signs are the same)

27. $f(x) = x^3 + 1$

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

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

neither
(the signs are mixed)

28. $f(x) = 2x^3 - x^5$

$$f(-x) = 2(-x)^3 - (-x)^5$$

$$f(-x) = -2x^3 + x^5$$

odd because $f(-x) = -f(x)$
(the signs are different)

29. $f(x) = -9x^6 - 6x^9$

$$f(-x) = -9(-x)^6 - 6(-x)^9$$

$$f(-x) = -9x^6 + 6x^9$$

neither
(the signs are mixed)

$$30. f(x) = -7x^8 + 7$$

$$f(-x) = -7(-x)^8 + 7$$

$$f(-x) = -7x^8 + 7$$

even because $f(x) = f(-x)$
(the signs are the same)

$$32. f(x) = x^7 + 2x^5 - 9x$$

$$f(-x) = (-x)^7 + 2(-x)^5 - 9(-x)$$

$$f(-x) = -x^7 - 2x^5 + 9x$$

odd because $f(-x) = -f(x)$
(the signs are different)

$$34. f(x) = x^4 + 2x^2 - 7$$

$$f(-x) = (-x)^4 + 2(-x)^2 - 7$$

$$f(-x) = x^4 + 2x^2 - 7$$

even because $f(x) = f(-x)$
(the signs are the same)

$$36. f(x) = x^6 + 4x^2 - 7x^{10} + 5$$

$$f(-x) = (-x)^6 + 4(-x)^2 - 7(-x)^{10} + 5$$

$$f(-x) = x^6 + 4x^2 - 7x^{10} + 5$$

even because $f(-x) = f(x)$
(the signs are the same)

$$31. f(x) = x^2 + x$$

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

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

neither
(the signs are mixed)

$$33. f(x) = 10x^2 + 8x^4 - 4x$$

$$f(-x) = 10(-x)^2 + 8(-x)^4 - 4(-x)$$

$$f(-x) = 10x^2 + 8x^4 + 4x$$

neither
(the signs are mixed)

$$35. f(x) = x^7 + 2x^3 + 8x$$

$$f(-x) = (-x)^7 + 2(-x)^3 + 8(-x)$$

$$f(-x) = -x^7 - 2x^3 - 8x$$

odd because $f(-x) = -f(x)$
(the signs are different)

$$37. f(x) = 2x^7 + 3x^6 - 4x^5 + 5x^4$$

$$f(-x) = 2(-x)^7 + 3(-x)^6 - 4(-x)^5 + 5(-x)^4$$

$$f(-x) = -2x^7 + 3x^6 + 4x^5 + 5x^4$$

neither
(the signs are mixed)