Show algebraically whether this function is odd, even, or neither:

$$y = \frac{3x}{5x^2 - 1}$$

$$f(-x) = \frac{3(-x)}{5x^2 - 1} = \frac{-3x}{5x^2 - 1} = -\left(\frac{3x}{5x^2 - 1}\right) = -f(x)$$

Since f(-x) = -f(x) this function is an ODD function

Show numerically whether this function is odd, even, or neither:

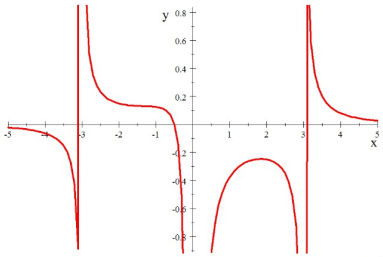
$$y = \sqrt{x^2 - 9}$$

X	Y
3	0
-3	0

Since f(-x) = f(x) this function appears to be EVEN

Determine graphically whether this function is odd, even, or neither:

$$y = \frac{2x + 1}{x^4 - 9x^2}$$



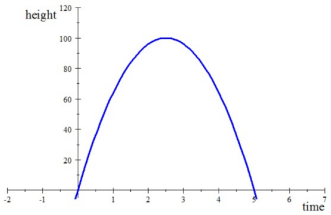
This graph doesn't appear to have symmetry about the y-axis or about the origin so it appears that this function is NEITHER odd nor even.

X	Y
1	3/8
-1	-1/8

As a way to confirm what I believe the graph shows
f(-x) ≠ -f(x) and f(-x) ≠ f(x)
Numerically this appears to be the same result.

Two rockets are shot upward. The table and graph below model the heights of these two rockets as a function of time.

Rocket A



Rocket B

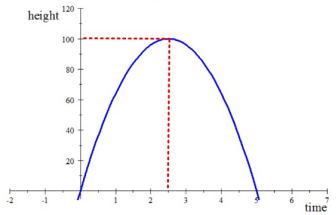
t	h
0	5
1	53
2	69
3	53
4	5
5	-75

Which Rocket goes higher? Rocket A appears to reach a higher max (about 100) than rocket B (about 69)

How long does it take this rocket to reach its max ht?

Rocket A reaches its max height in about 2.5 sec

Rocket A



Rocket B

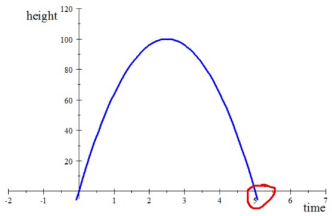
t	h
0	5
1	53
2	69
3	53
4	5
5	-75

max height approx 69 ft.

Which rocket hits the ground first? How do you know?

It appears that Rocket B returns to the ground sooner than Rocket A.

Rocket A



returns to the ground in about 5 sec.

Rocket B

t	h
0	5
1	53
2	69
3	53
4	5
5	-75

returns to the ground between 4 & 5 sec.

Sketch the graph of the following polynomial:

- Intervals of increasing:(-∞,-5)U(-1,1)U(3,6)
- Intervals of decreasing:(-5,-1)U(1,3)U(6,∞)
- Absolute Max value of 7 in 1st quadrant.
- Relative Min value of -2 in 3rd quadrant
- Relative Max value of 4 in 2nd quadrant
- Relative Min value of -4
- Relative Max value of 5 close to the y-axis

Sketch the graph of the following polynomial:

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- Relative Max value of 4 in 2nd quadrant
- Relative Min value of -4
- Relative Max value of 5 close to the y-axis

What is probably the degree of this polynomial?

This is probably a 6th degree polynomial since it will have 6 x-intercepts.