

Stick Quiz

1. Simplify $\frac{36m^4y^4 - 18m^3y^2}{6m^2y} = 6m^2y^3 - 3my$

2. Use long division and Synthetic division. $m^2 - 7m + 10$

$$\begin{array}{r}
 m^2 - 7m + 10 \\
 m+4 \overline{) (m^3 - 3m^2 - 18m + 40) \div (m+4)} \\
 \underline{+(m^3 + 4m^2)} \\
 -7m^2 - 18m \\
 \underline{+(7m^2 + 28m)} \\
 10m + 40 \\
 \underline{-(10m + 40)} \\
 0
 \end{array}$$

$\frac{m^3}{m} = m^2$
 $m^2(m+4) = m^3 + 4m^2$

$\frac{10m}{m} = 10$
 $10(m+4) = 10m + 40$
 $\frac{-7m^2}{m} = -7m$
 $-7m(m+4) = -7m^2 - 28m$

Jan 23-8:29 AM

5-3 Polynomial Functions

I can... evaluate polynomial expression, explaining the end behavior and state the number of real zeros.

No Calculator on this section!

Only Polynomials with One Variable

Jan 10-1:03 PM

1. Given the function $b(m) = 2m^2 + m - 1$

$$b(3) = 2(3)^2 + (3) - 1$$

$$2 \cdot 9 + 3 - 1$$

$$18 + 3 - 1$$

$$\boxed{20}$$

$$b(-3) = 2(-3)^2 + (-3) - 1$$

$$2 \cdot 9 + -3 - 1$$

$$18 - 3 - 1$$

$$\boxed{14}$$

1. Given the function $b(m) = 2m^2 + m - 1$

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

$$2(4x^2 - 4x + 1) + 2x - 1 - 1$$

$$8x^2 - 8x + 2 + 2x - 1 - 1$$

$$\boxed{8x^2 - 6x}$$

$$(2x-1)(2x-1)$$

$$4x^2 - 2x - 2x + 1$$

$$4x^2 - 4x + 1$$

$$3b(x) = 3 \cdot [2(x)^2 + (x) - 1]$$

$$\boxed{6x^2 + 3x - 3}$$

Jan 23-8:35 AM

Stepping up the game...

2. Given the function $b(m) = 2m^2 + m - 1$

$$b(2x-1) - (3b(x))$$

$$8x^2 - 6x - (6x^2 + 3x - 3)$$

$$\underline{8x^2} - 6x - \underline{6x^2} - 3x + 3$$

$$\boxed{2x^2 - 9x + 3}$$

★ DO each part separately

Nov 11-3:47 PM

You Try!!

3. Given the function $r(x) = 2x^2 - 5x + 1$

Find $r(a^2) + r(a + 2)$

$r(a^2)$

$$(2a^4 - 5a^2 + 1)$$

$r(a+2)$

$$2(a+2)^2 - 5(a+2) + 1$$

$$2(a^2 + 4a + 4) - 5a - 10 + 1$$

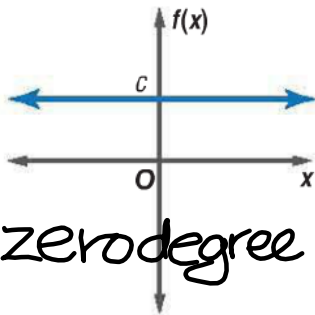
$$2a^2 + 8a + 8 - 5a - 10 + 1$$

$$+ (2a^2 + 3a - 1)$$

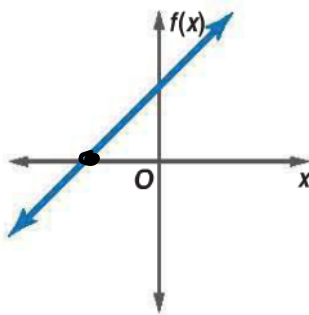
$$2a^4 - 3a^2 + 3a$$

Nov 11-3:52 PM

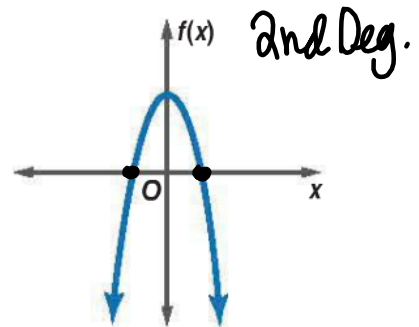
$$y = 3$$



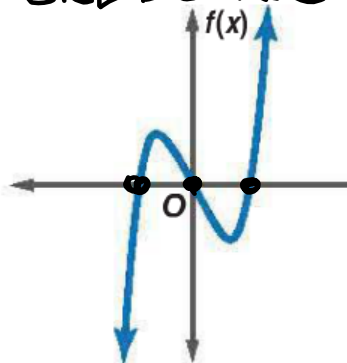
FIRST DEGREE
 $y = x - 4$



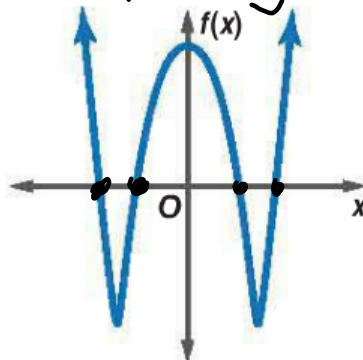
$$y = x^2 + 3$$



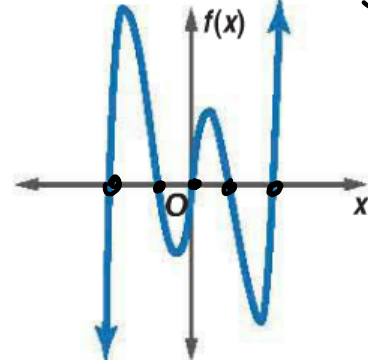
3RD DEGREE



4th Deg



5th Deg



Jan 23-8:35 AM

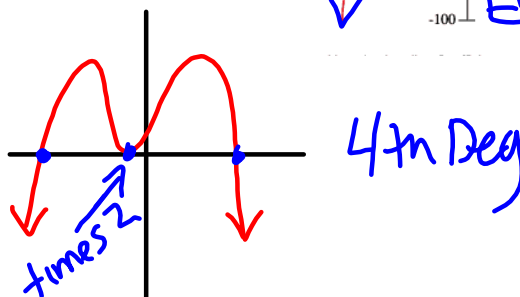
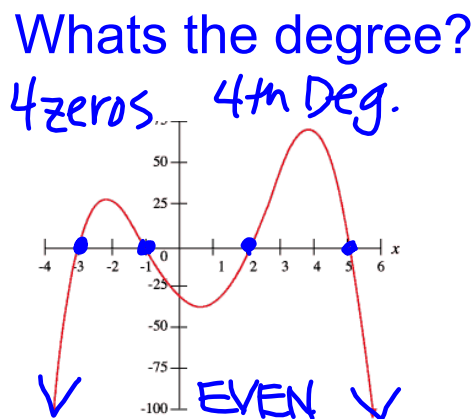
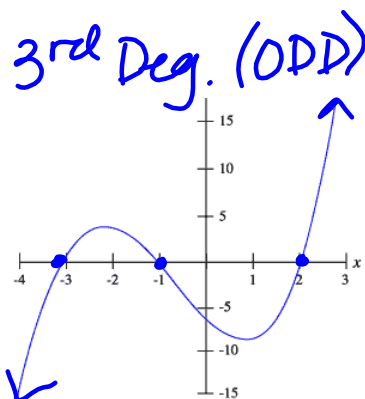
S O O O O O

What does the degree tell us?

of turns (1 less than deg)
of zeros (# of Deg)

Jan 23-3:37 PM

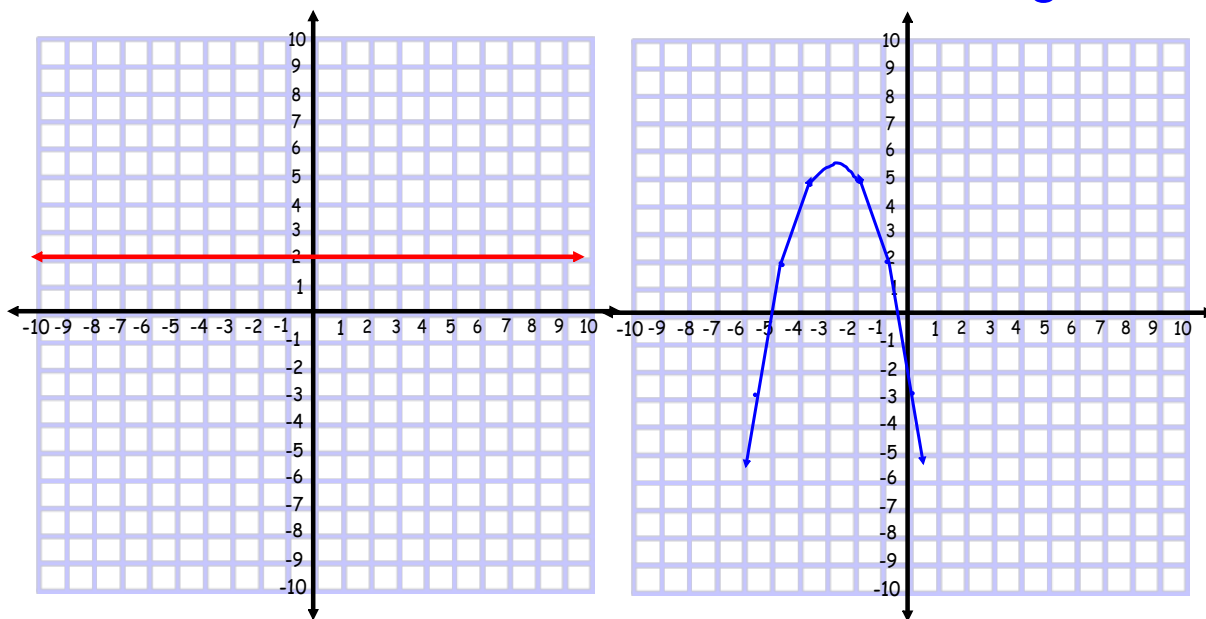
How many zeros does it have?



Jan 23-8:35 AM

How many zeros does it have?

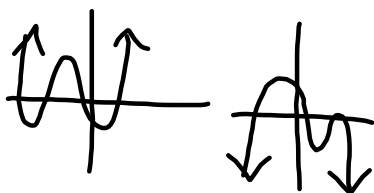
Whats the degree?



Nov 11-4:04 PM

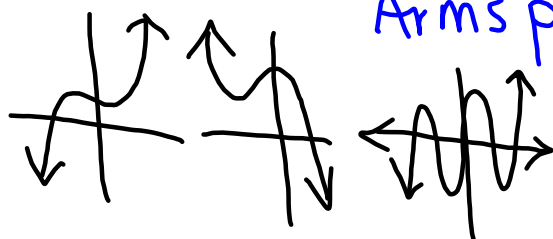
ZEROS

Even Degrees: Must have even # of zeros



Arms point same direction

Odd Degrees: Must have odd # of zeros



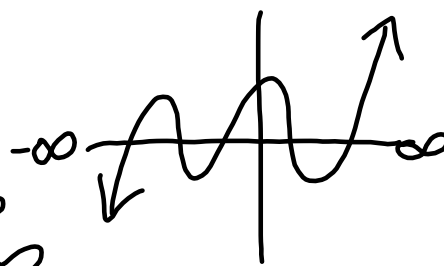
Arms point in different directions

Jan 23-1:10 PM

END BEHAVIOR

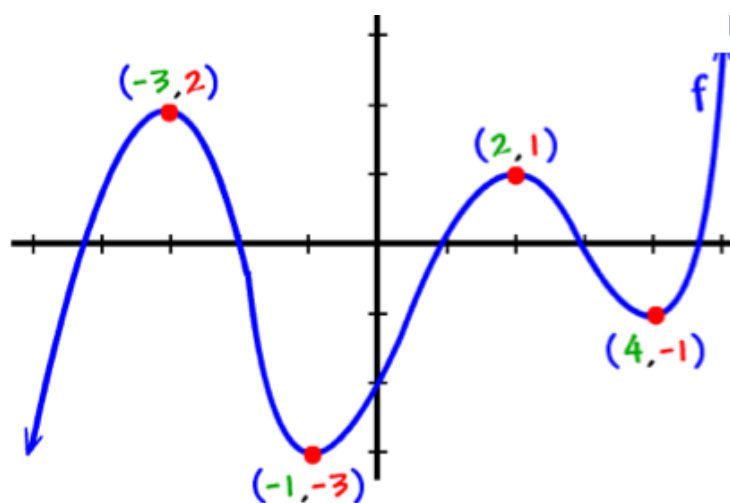
As $x \rightarrow \infty$, $y \rightarrow \infty$

As $x \rightarrow -\infty$, $y \rightarrow -\infty$



Nov 19-2:12 PM

End behavior: what happens to the function as x gets larger or smaller



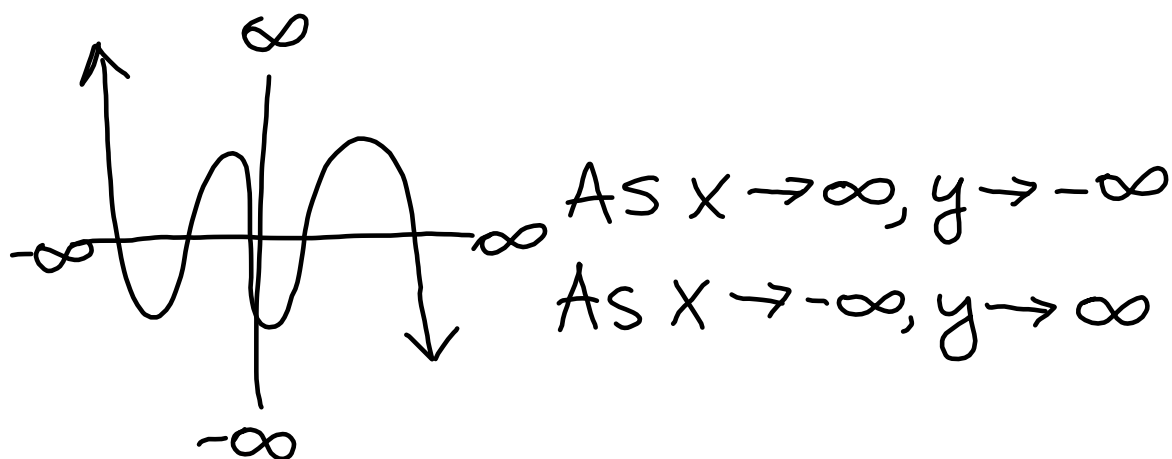
As $x \rightarrow +\infty$

$f(x) \rightarrow$

As $x \rightarrow -\infty$

$f(x) \rightarrow$

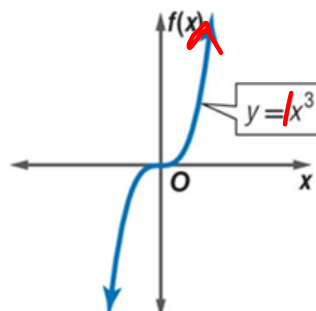
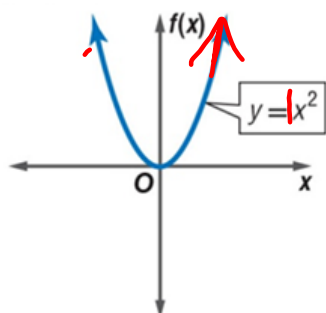
Jan 23-12:32 PM



Nov 19-2:14 PM

If the leading coefficient is **positive**. \rightarrow **Right Arm Up**

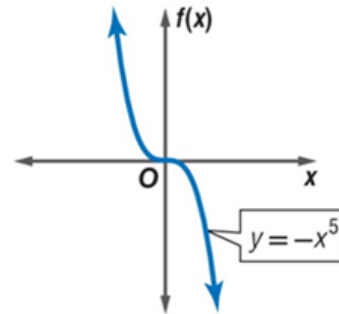
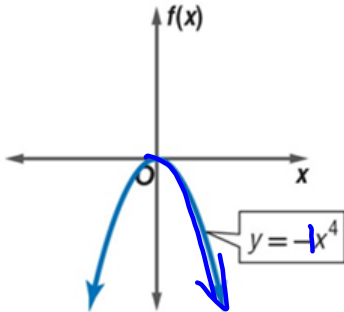
As $x \rightarrow +\infty$ $f(x) \rightarrow +\infty$



Nov 11-4:12 PM

If the leading coefficient is **negative** — *Right arm Down*

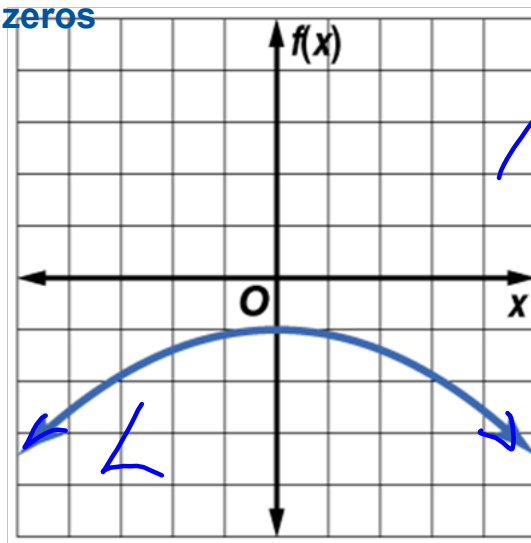
$$\text{As } x \rightarrow +\infty \quad f(x) \rightarrow -\infty$$



Nov 11-4:15 PM

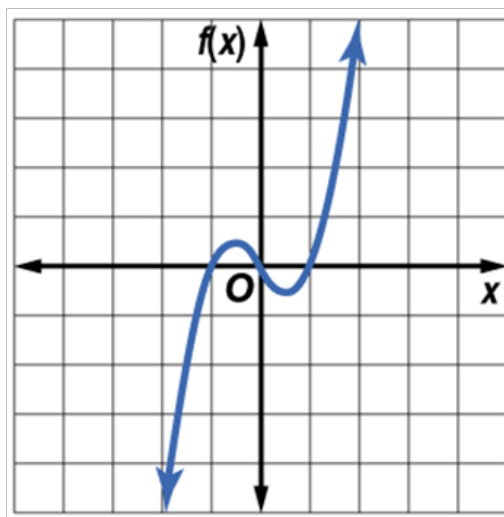
6. For the graph,

- end behavior; *as $x \rightarrow \infty, y \rightarrow$*
as $x \rightarrow -\infty, y \rightarrow$
- odd-degree or an even-degree
- state the number of real zeros
- Leading Coefficient —



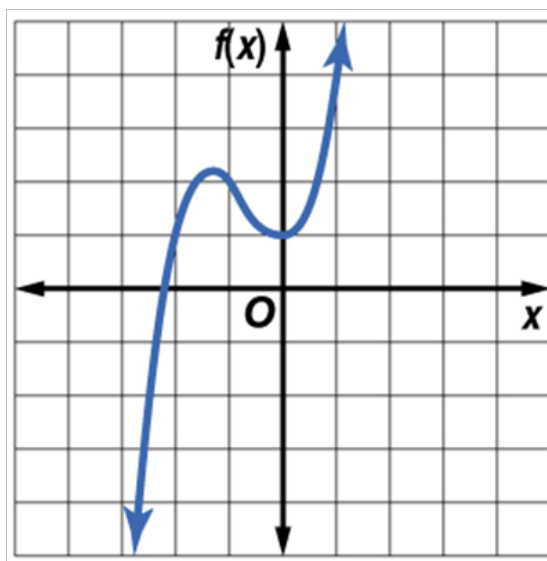
Jan 23-8:36 AM

7. For the graph,
- end behavior,
 - odd-degree or an even-degree
 - state the number of real zeros
 - Leading Coefficient



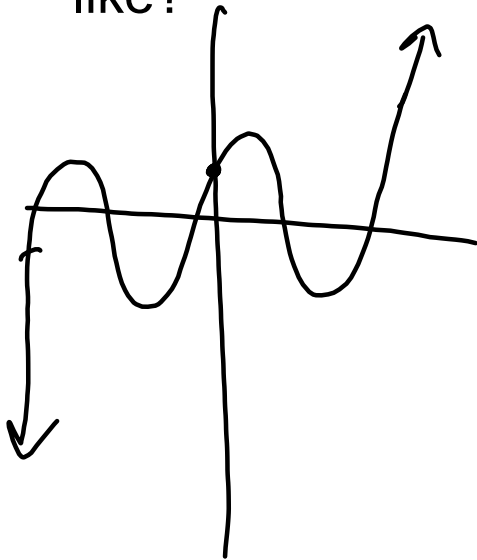
Jan 23-8:39 AM

8. For the graph,
- end behavior,
 - odd-degree or an even-degree
 - state the number of real zeros
 - Leading Coefficient



Jan 23-8:36 AM

9. What does $x^5 + 2x^4 + 3x^3 + 5x^2 + 7x + 3$ look like?

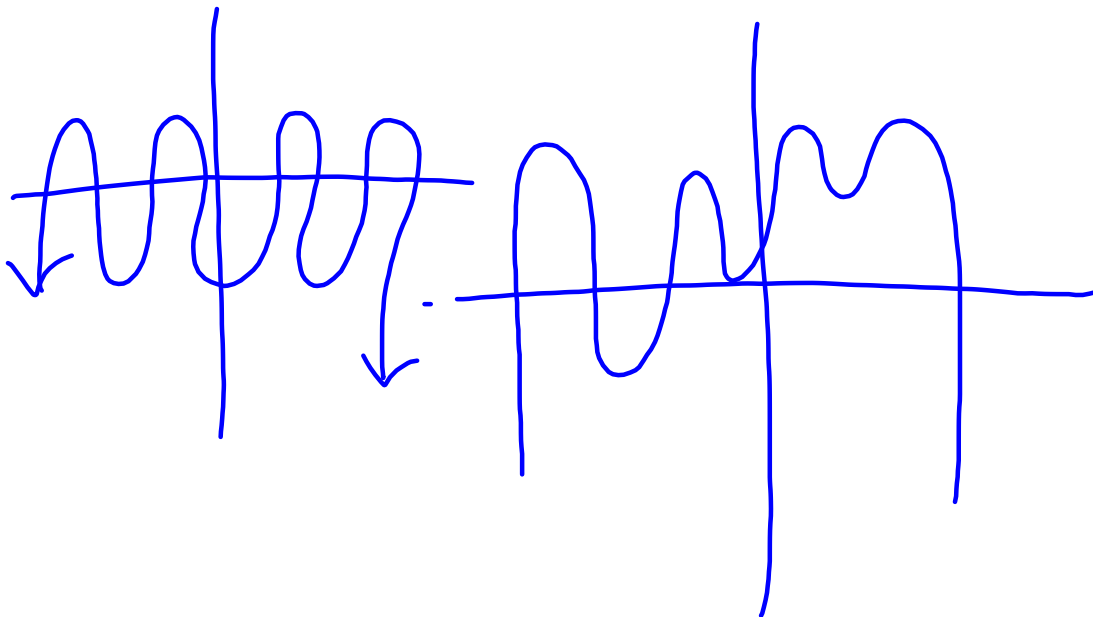


1. Degree 5
2. even/odd
3. pos/neg

as $x \rightarrow \infty$ $y \rightarrow \infty$
 as $x \rightarrow -\infty$ $y \rightarrow -\infty$

Jan 27-2:00 PM

10. What does $-4x^8 - 5x^4 + 5x^2 - 9x - 6$ look like?



Jan 27-2:31 PM



Homework 5.3

Pg. 326

#13-41o, 51, 52

and WKST

Jan 23-3:20 PM

4. The height of a toy rocket during a 2.35 second flight is predicted by the function $h(t) = -4t^3 + 6t^2 + 8t$, where h is the height in meters and t is the time in seconds. Find the height of the toy rocket 1.25 seconds into the flight.

Jan 23-8:34 AM

5. **RESPIRATION** The volume of air in the lungs during a 5-second respiratory cycle can be modeled by

$v(t) = -0.037t^3 + 0.152t^2 + 0.173t$, where v is the volume in liters and t is the time in seconds. Find the volume of air in the lungs 1.5 seconds into the respiratory cycle.