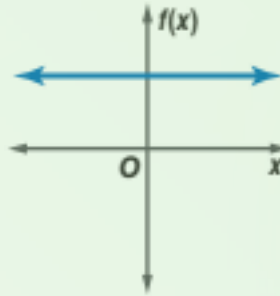
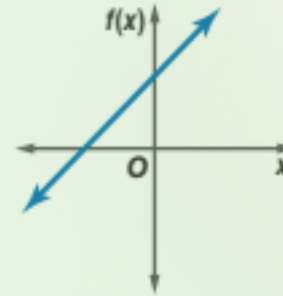


# Characteristics of Polynomial Functions

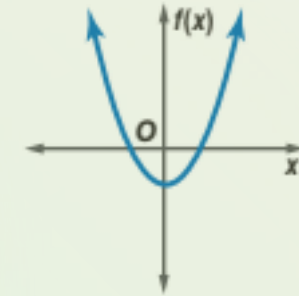
Constant function  
Degree 0



Linear function  
Degree 1



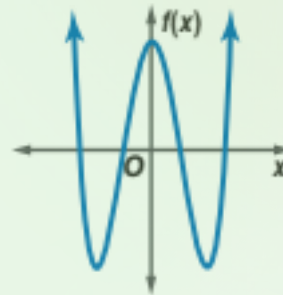
Quadratic function  
Degree 2



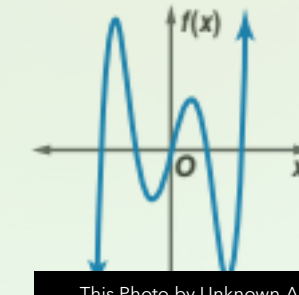
Cubic function  
Degree 3



Quartic function  
Degree 4



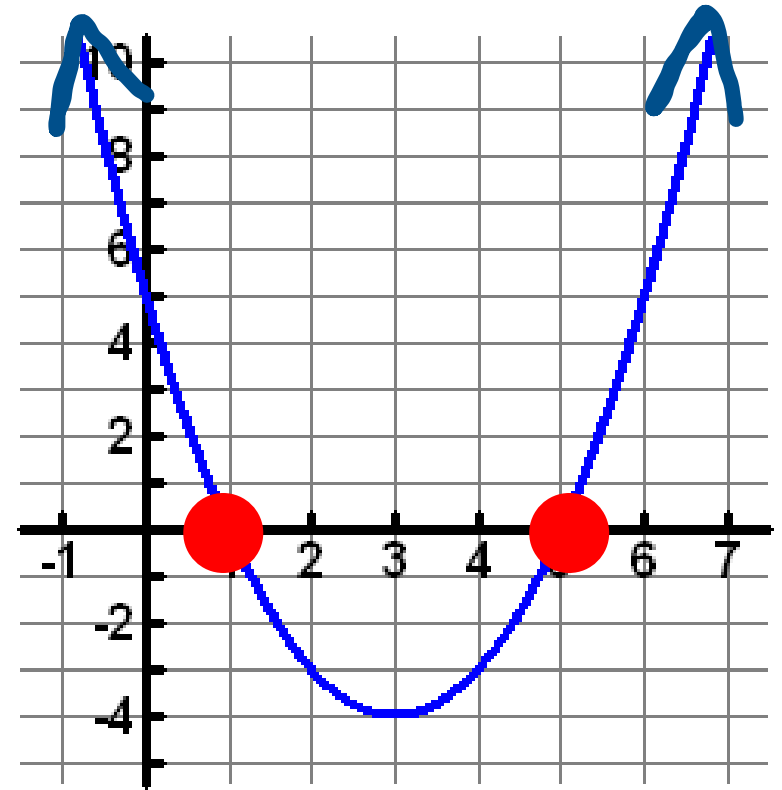
Quintic function  
Degree 5



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# Zeros (x-intercepts)

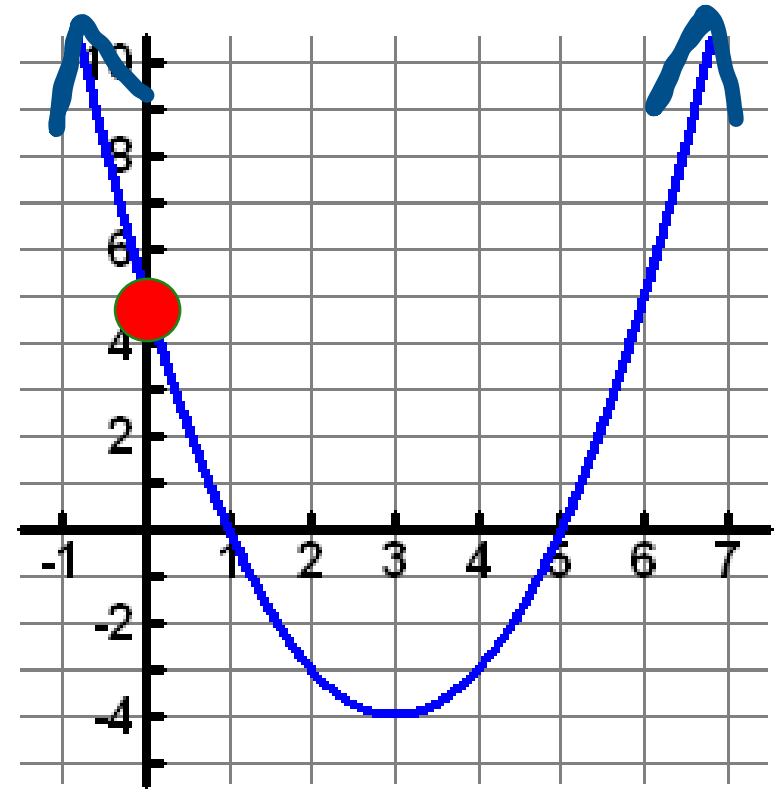
- A zero of a function is where the graph crosses or touches the x-axis.
- It is called a zero because it is the point on the graph where the y-value equals 0.
- Zeros are also called x-intercepts or roots.



$(1, 0)$  &  $(5, 0)$

# Y-Intercepts

- The y-intercept of a function is where the graph crosses the y-axis.



**(0, 5)**

# Let's put it all together!

Find the following

1. Domain:

2. Range:

3. Zeros:

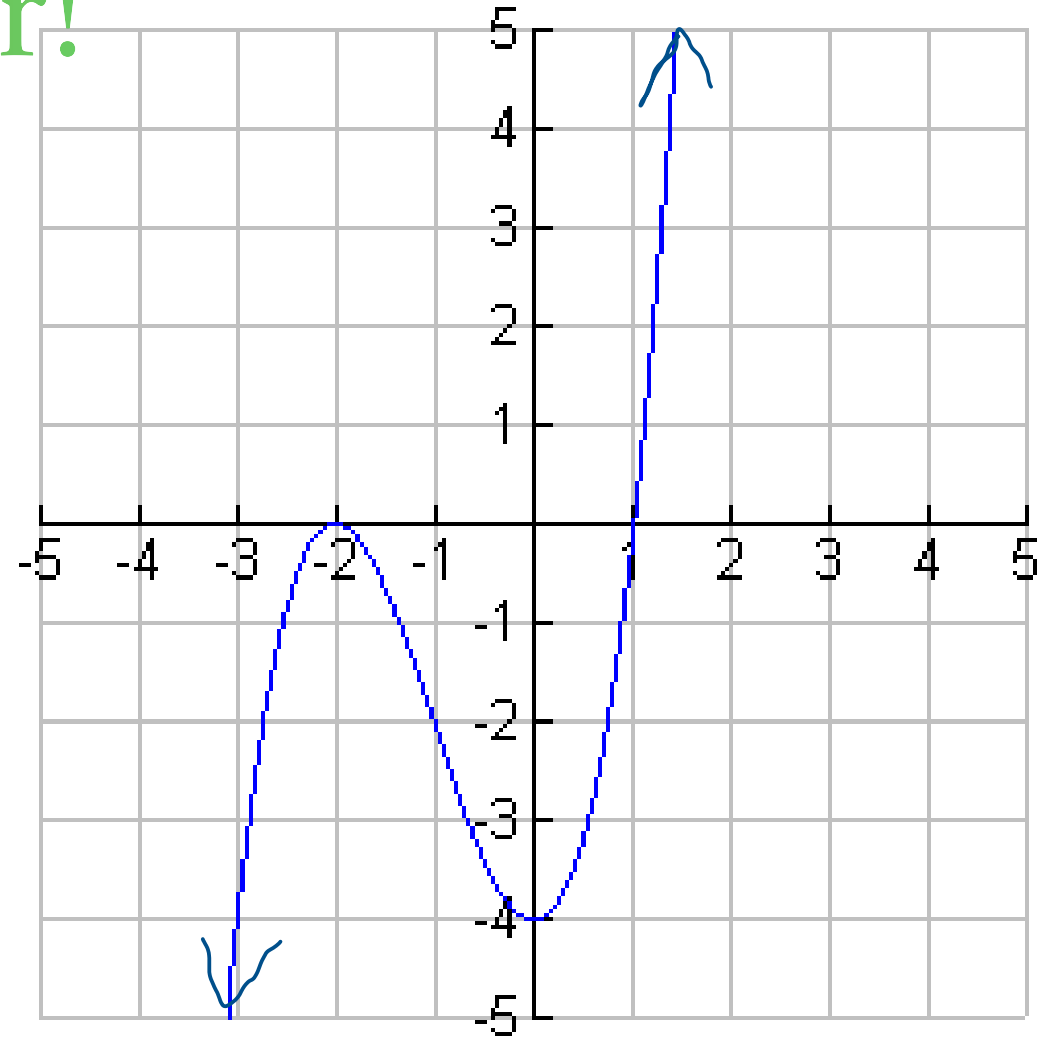
4. y-intercepts:

5. Absolute Max/Min:

6. Relative Max/Min:

7. Intervals of Increase:

8. Intervals of Decrease:



## Find the following

1. Domain:  $(-\infty, +\infty)$
2. Range:  $(-\infty, +\infty)$
3. Zeros:  $x = -2, -2, 1$
4. y-intercepts:  $(0, -4)$
5. Absolute Max/Min: none
6. Relative Max/Min:  $(-2, 0)/(-4, 0)$
7. Interval of Increase:  $(-\infty, -2) \cup (0, \infty)$
8. Interval of Decrease:  $(-2, 0)$

