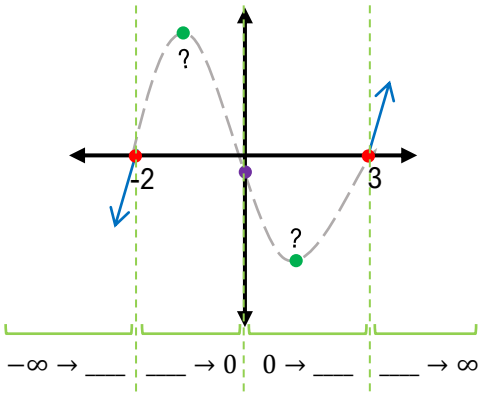
TOPIC: GRAPHING POLYNOMIAL FUNCTIONS

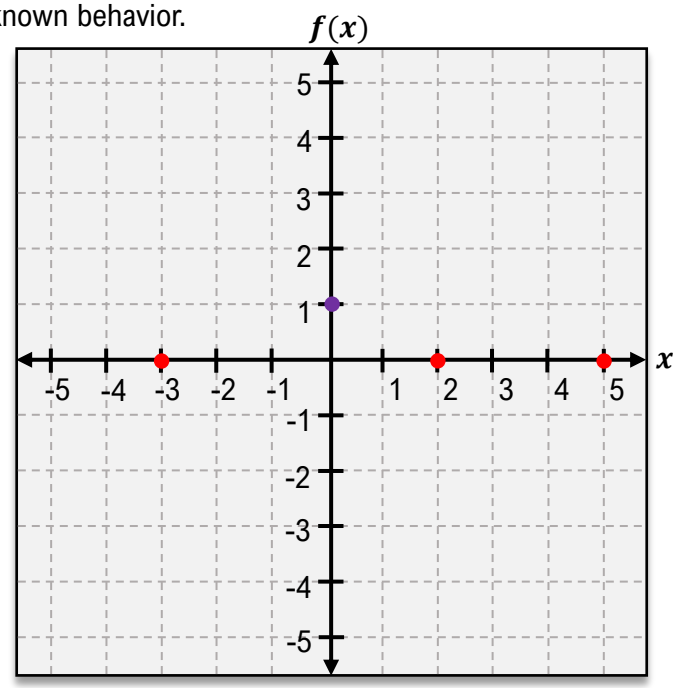
Intervals of Unknown Behavior

- We know how to determine **end behavior**, **x-intercepts**, **y-intercept**, and **turning points** of a polynomial function.
  - Find behavior between known points by breaking graph into _____ & plotting a _____ in each interval.



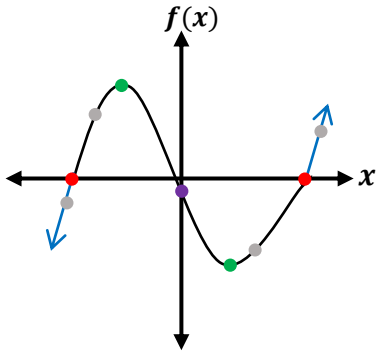
x				
$f(x)$				

PRACTICE: Based on the known points plotted on the graph, determine what intervals the graph should be broken into in order to determine unknown behavior.



TOPIC: GRAPHING POLYNOMIAL FUNCTIONS

- To graph a polynomial function, include **end behavior**, **x-intercepts**, **y-intercept**, **turning points**, & **points between**.



TO GRAPH

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

1) End Behavior ($a_n x^n$):

a_n + −

Right side [RISES | FALLS]

n EVEN ODD

Ends are [SAME | OPPOSITE]

2) x-int(s) & behavior→ Solve $f(x) = 0$

$2(x-1)^3 = 0$ $x =$ _____

Multiplicity: ____

EVEN ODD

[TOUCH | CROSS]

3) y-int→ Compute $f(0)$: _____

$f(0) = 2(0-1)^3 =$

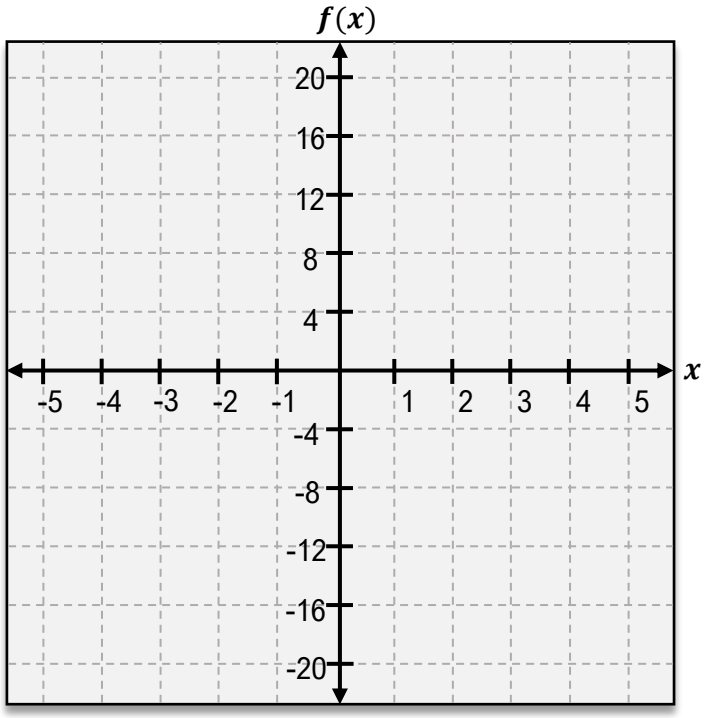
4) Determine intervals & plot a point in each

$-\infty \to$ ___ | $0 \to$ ___ | ___ $\to \infty$

x			
$f(x)$			

5) Connect with smooth, continuous curve

6) Check max. turning pts.→ $(n-1)$: ____ ☐



TOPIC: GRAPHING POLYNOMIAL FUNCTIONS

EXAMPLE: Graph the polynomial function. Determine the domain and range.

$f(x) = 3x^3 + 12x^2 + 12x$

TO GRAPH

1) End Behavior ($a_n x^n$):

Right side [RISES | FALLS]

Ends are [SAME | OPPOSITE]

2) x-int(s) & behavior→ Solve $f(x) = 0$

$x =$ _____ $x =$ _____

Multiplicity: ____ Multiplicity: ____

[TOUCH | CROSS] [TOUCH | CROSS]

3) y-int→ Compute $f(0)$: _____

4) Determine intervals & plot a point in each

x			
$f(x)$			

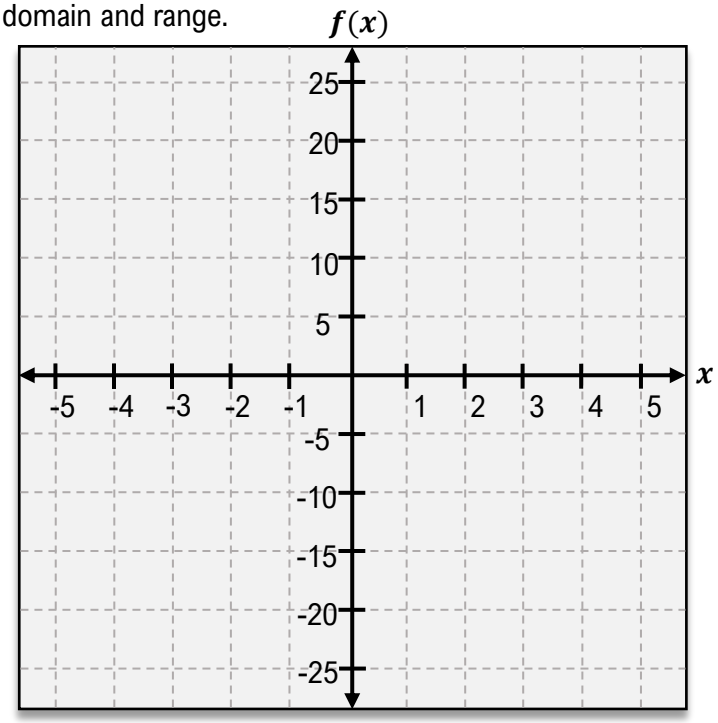
5) Connect with smooth, continuous curve

6) Check max. turning pts.→ $(n-1)$: ____ ☐

FROM GRAPH

Domain: _____

Range: _____



2) $f(x) = 0$

3) $f(0) =$

4) $f(\quad) =$

$f(\quad) =$

$f(\quad) =$

TOPIC: GRAPHING POLYNOMIAL FUNCTIONS

PRACTICE: Graph the polynomial function. Determine the domain and range.

$f(x) = (3x + 2)(x - 1)^2$

TO GRAPH

1) End Behavior ($a_n x^n$):

Right side [RISES | FALLS]

Ends are [SAME | OPPOSITE]

2) x-int(s) & behavior→ Solve $f(x) = 0$

$x =$ _____ $x =$ _____

Multiplicity: ____ Multiplicity: ____

[TOUCH | CROSS] [TOUCH | CROSS]

3) y-int→ Compute $f(0)$: _____

4) Determine intervals & plot a point in each

x				
$f(x)$				

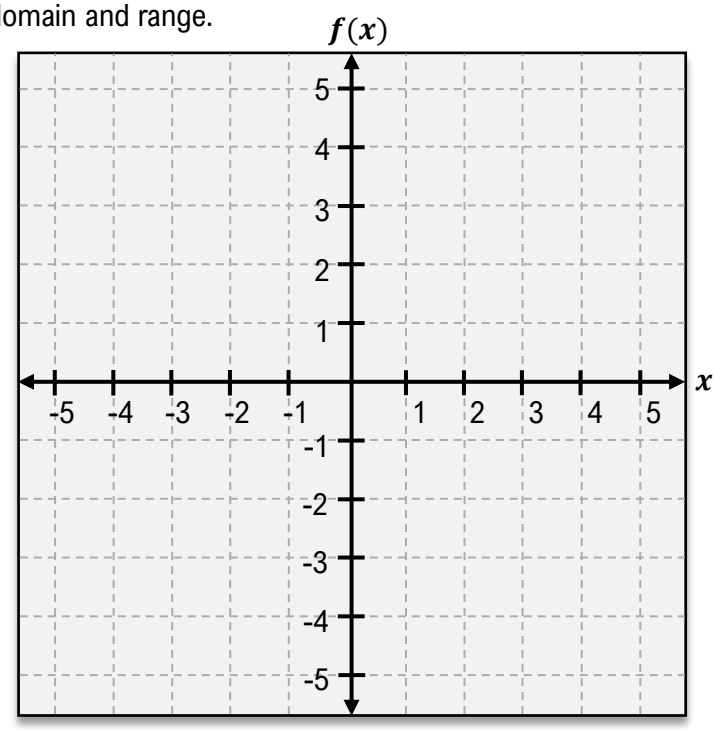
5) Connect with smooth, continuous curve

6) Check max. turning pts.→ $(n - 1)$: ____ ☐

FROM GRAPH

Domain: _____

Range: _____



2) $f(x) = 0$

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