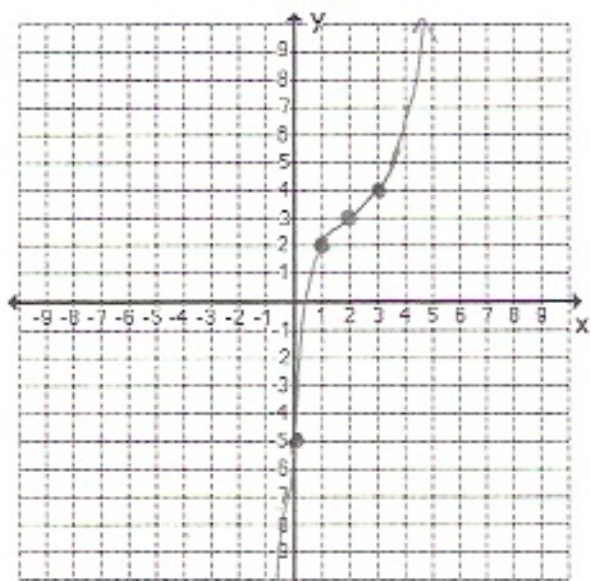


Graph each of the following cubic functions. Label the vertex, find all intercepts, and the range and domain of each of the following. Don't worry about graphing the intercept if it is too far off the chart.

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

y-int →

x	y
0	-5
1	2
3	4



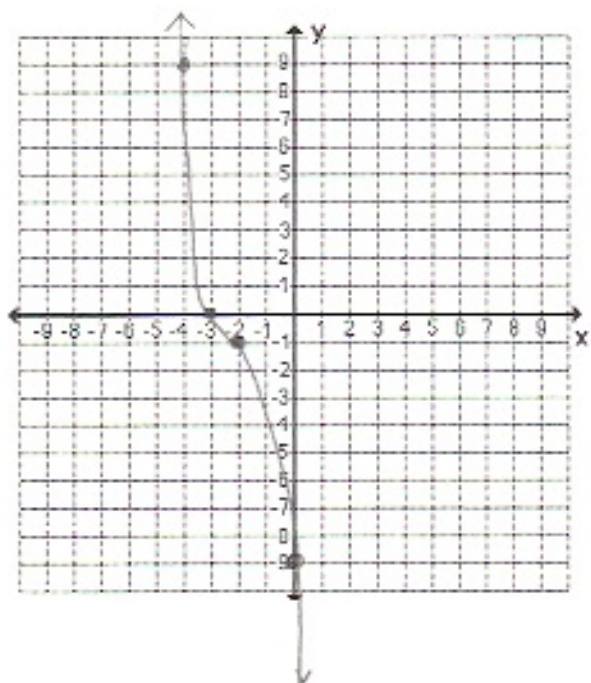
Vertex:  $(2, 3)$   
 Y-intercept:  $(0, -5)$   
 X-intercepts:  $\approx \frac{1}{2}$   
 Range:  $\{ \text{all reals} \}$   
 Domain:  $\{ \text{all reals} \}$

Note the negative sign ~ what "happens" to the graph?

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

y-int

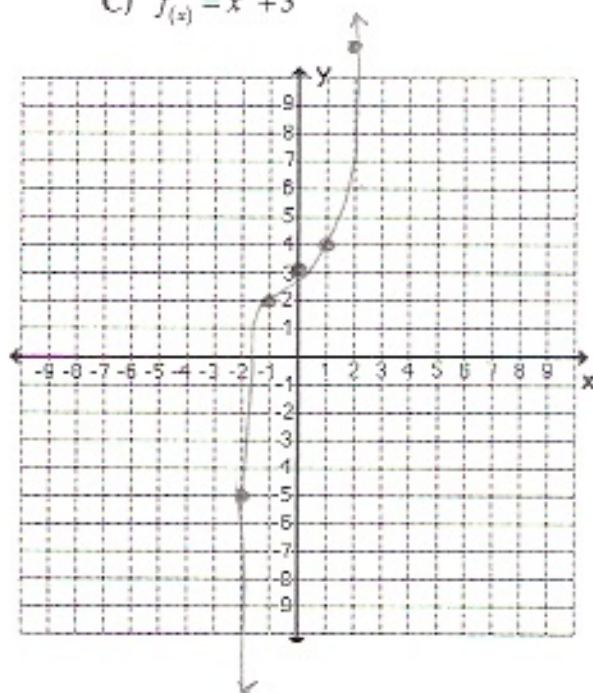
x	y
0	-9
-1	-2
-3	0
-4	9



Vertex:  $(-2, -1)$   
 Y-intercept:  $(0, -9)$   
 X-intercepts:  $-3$   
 Range:  $\{ \text{all reals} \}$   
 Domain:  $\{ \text{all reals} \}$

C)  $f(x) = x^3 + 3$

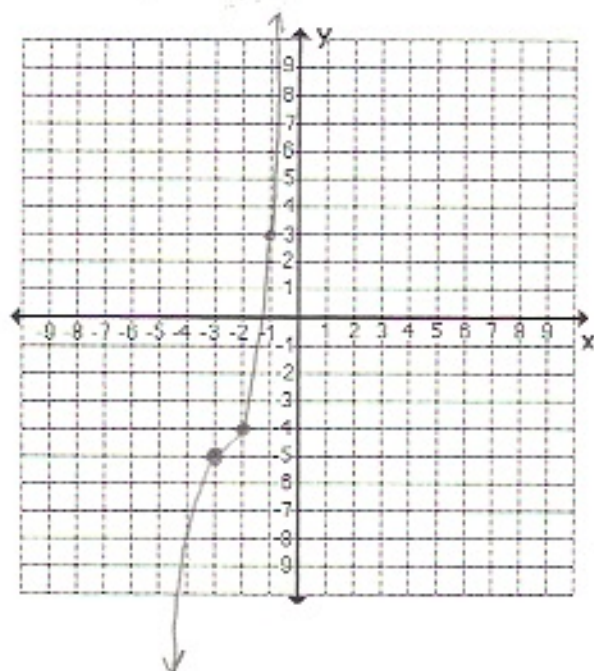
x	y
1	4
2	11
-1	2
-2	-5



Vertex:  $(0, 3)$   
 Y-intercept: same as vertex  
 X-intercepts:  $\approx -1.5$   
 Range: } all reals  
 Domain: }

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

x	y
0	22
-2	-4
-1	

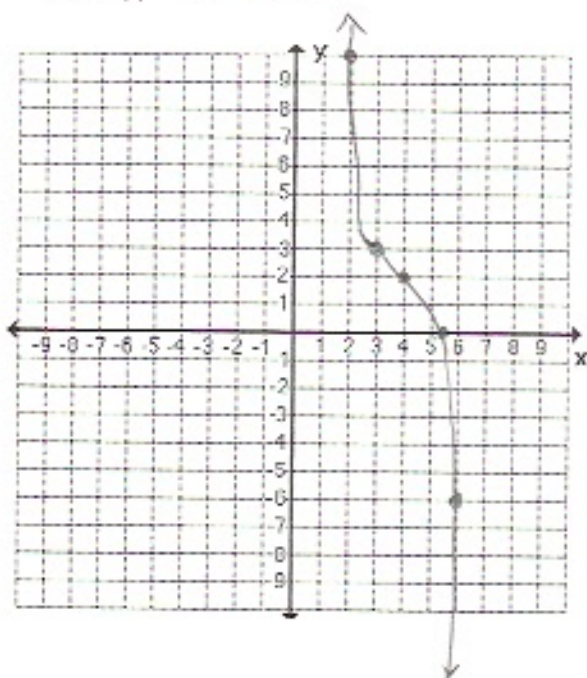


Vertex:  $(-3, -5)$   
 Y-intercept:  $(0, 22)$   
 X-intercepts:  $\approx -1.3$   
 Range: } all reals  
 Domain: }

Note, again, negative sign...

E)  $f(x) = -(x-4)^3 + 2$

x	y
3	3
2	10
0	66
6	-6



Vertex:  $(4, 2)$

Y-intercept:  $(0, 66)$

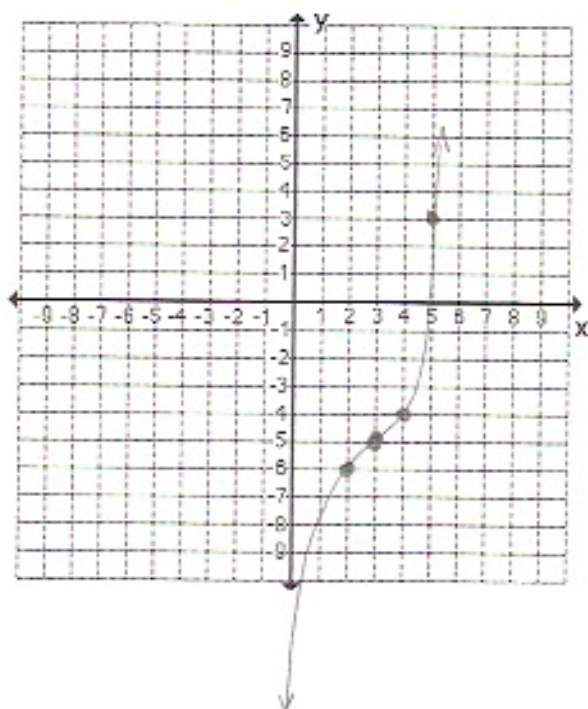
X-intercepts:  $\sim 5.3$

Range: } all reals

Domain:

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

x	y
0	-27
2	-6
4	-4
5	3



Vertex:  $(3, -5)$

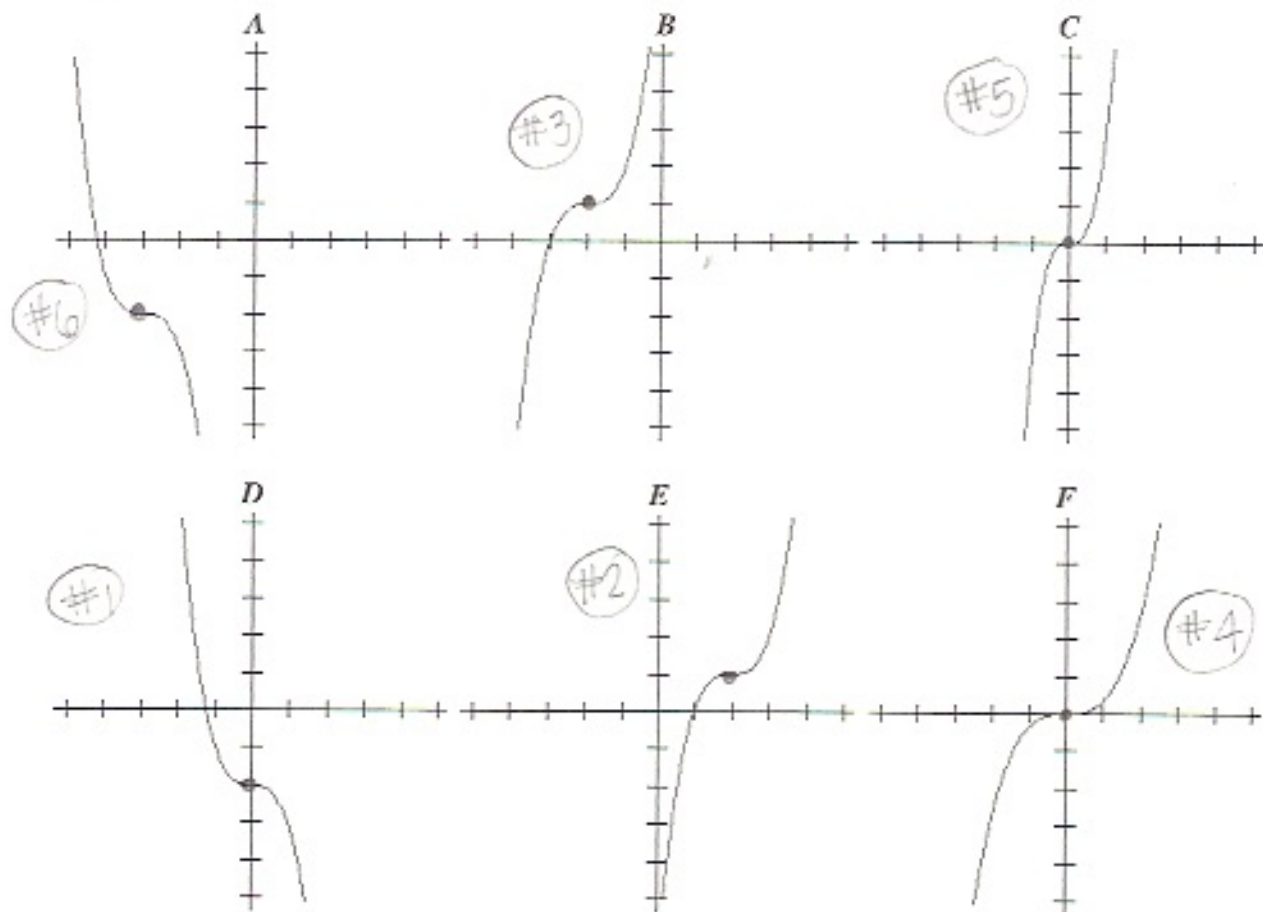
Y-intercept:  $(0, -27)$

X-intercepts:  $\sim 5$

Range: } all reals

Domain:

Match the appropriate graph with its equation below. Explain why each of your solutions is true.



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

vertex  $(0, -2)$   
negative  $a$   
Ⓓ

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

vertex  $(2, 1)$

Ⓔ

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

vertex  $(-2, 1)$

Ⓑ

4)  $f(x) = \frac{1}{3}x^3$

vertex  $(0, 0)$

$a < 1$

Ⓕ

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

vertex  $(0, 0)$

$a > 1$

Ⓒ

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

vertex  $(-3, -2)$

negative  $a$

Ⓐ