

Taking a Closer Look!

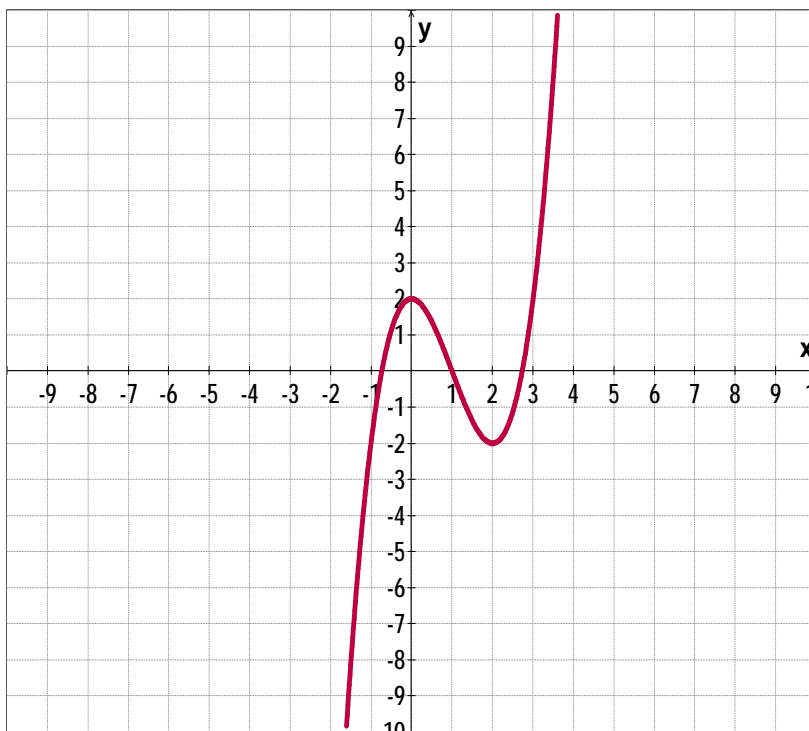
Name ANSWERS

Directions: Give answers about the graph in interval notation when possible. Write NONE if the condition does not apply to this graph. Round answers to the nearest hundredth if needed.



Graph:

$$y = x^3 - 3x^2 + 2$$



1. Is it a function? **YES**
2. Domain: **$(-\infty, \infty)$**
3. Range: **$(-\infty, \infty)$**
4. x -intercept(s): **$\{-0.73, 1, 2.73\}$**
5. y -intercept(s): **$\{2\}$**
6. Symmetry: **point symmetry $(1,0)$**
7. Where is the graph increasing?
 $(-\infty, 0] \cup [2, \infty)$
8. Where is the graph decreasing?
 $[0, 2]$
9. Where is $y < 0$? **$(-\infty, -0.73) \cup (1, 2.73)$**
10. Where is $y > 0$? **$(-0.73, 1) \cup (2.73, \infty)$**
11. Where is $y = 0$? **$x = -0.73, 1, 2.73$**
12. Find y when $x = -4$. **-110**
13. For what x -value(s) is $y = 2$? **$x = 0, 3$**
14. Absolute maximum value of graph:
none – approaches ∞
15. Absolute minimum value of graph:
none – approaches $-\infty$
16. Relative maximum value(s) of graph:
at $(0, 2)$
17. Relative minimum value(s) of graph:
at $(2, -2)$
18. Asymptote(s): (state equation(s))
none
19. Assuming $y = f(x)$:
as $x \rightarrow +\infty$, $f(x) \rightarrow$ **$+\infty$**
as $x \rightarrow -\infty$, $f(x) \rightarrow$ **$-\infty$**
20. Name given to this graph: **Cubic**