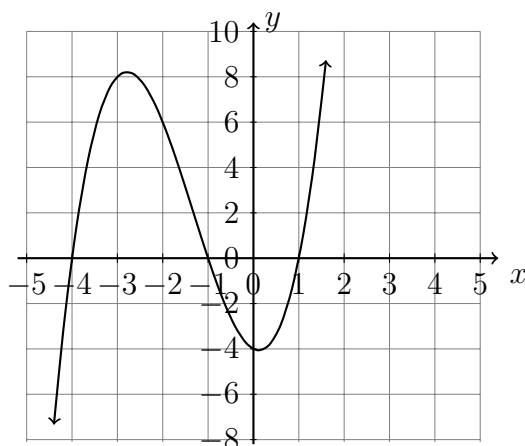
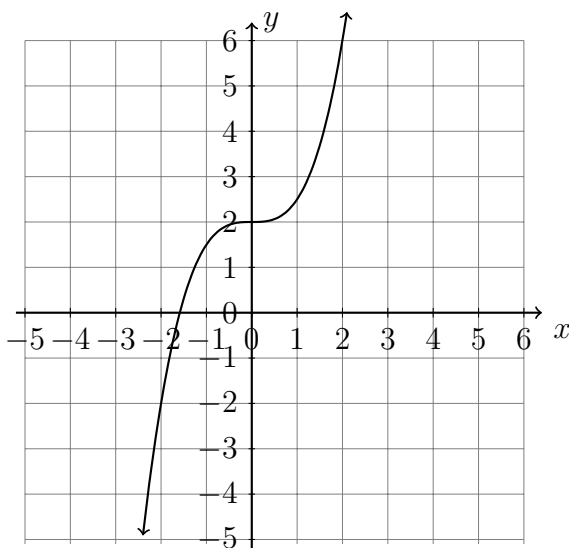


4.3 Classwork: Cubic inverse functions

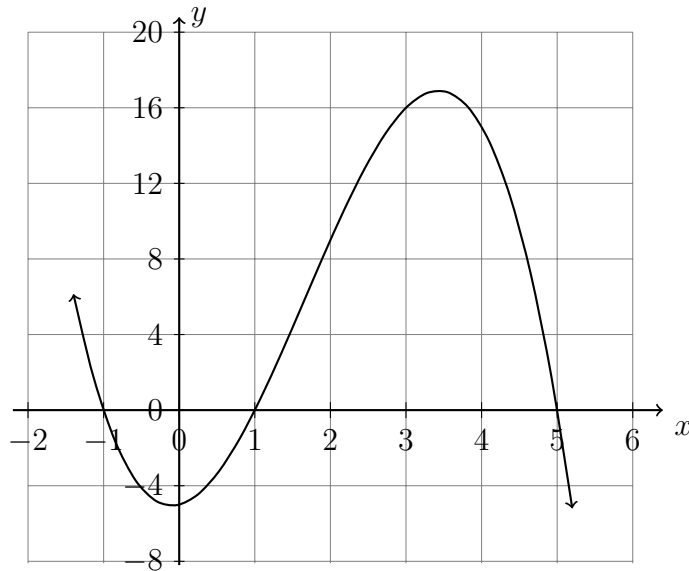
1. Do Now: Shown in the plot below is the function $f(x) = x^3 + 4x^2 - 1x - 4$.
 - (a) Write down the value of $f(0)$. On the graph, mark the point for $f(0)$ with a star.
 - (b) Write down the solutions to $f(x) = 0$. Mark them with “X” marks on the graph.
 - (c) Mark the portion of the function that is *decreasing* with a squiggly line.



2. Shown in the plot below is the function $g(x) = 0.5x^3 + 2$.
 - (a) On the graph plot the points on g : $(-2, -2)$, $(0, 2)$, and $(2, 6)$.
 - (b) Flip the x and y coordinates of those points as guide for the inverse function g^{-1} .
 - (c) Plot the inverse function g^{-1} .



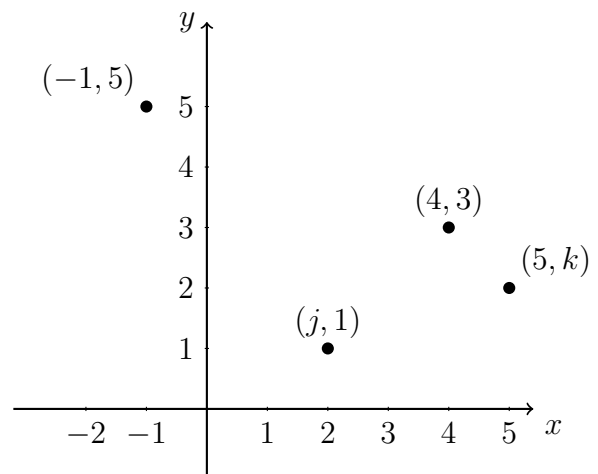
3. A cardboard box manufacturing company is building boxes with length represented by $x + 1$, width by $5 - x$, and height by $x - 1$. The volume of the box is modeled by the function below.



- (a) Over what interval of positive x values is the volume positive?
- (b) Estimate the maximum volume of the box possible.
- (c) Approximately what value of x would maximize the volume of the box?
4. A relation composed of four points is plotted on the graph below, and represented as a set of ordered pairs as $\{(-1, 5), (j, 1), (4, 3), (5, k)\}$.

- (a) Write down j
- (b) Write down k
- (c) Write down the domain.

- (d) Is the relation a function? Why or why not.



- (e) Add an ordered pair to the relation so that it would *not* be a function.

5. The graph of a function f is shown on the grid below.

(a) Write down $f(2)$

(b) Find x for $f(x) = 6$.

(c) Write down the domain.

(d) Write down the range.

