BECA / IB Math 03-Quadratic functions Name:
26 January 2022

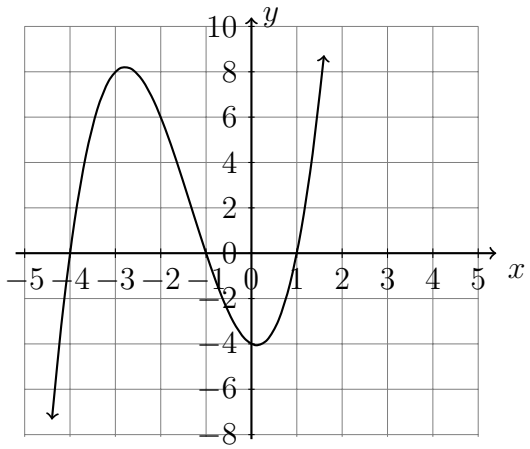
4.3 Classwork: Cubic inverse functions

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.

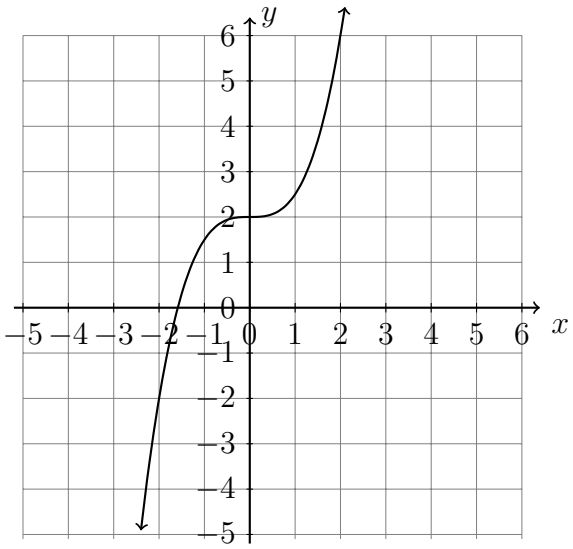


2. Shown in the plot below is the function $g(x) = 0.5x^3 + 2$.

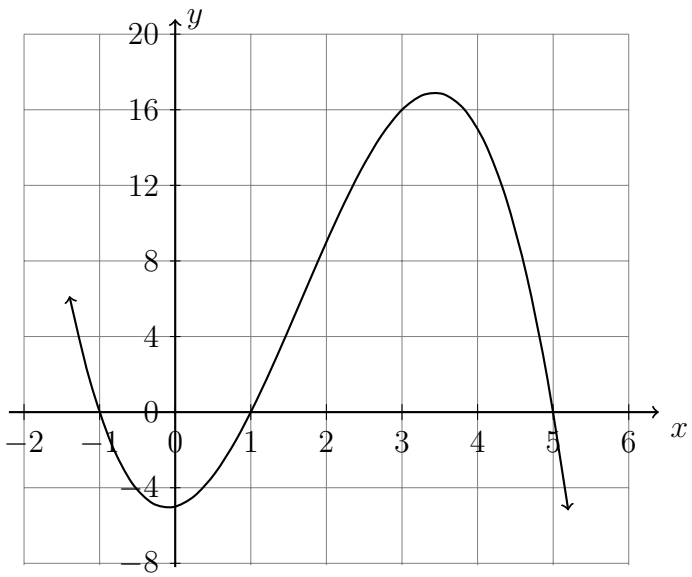
   (a) On the graph plot the points on g: $(-2, -2)$, $(0, 2)$, and $(2, 6)$.

   (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?

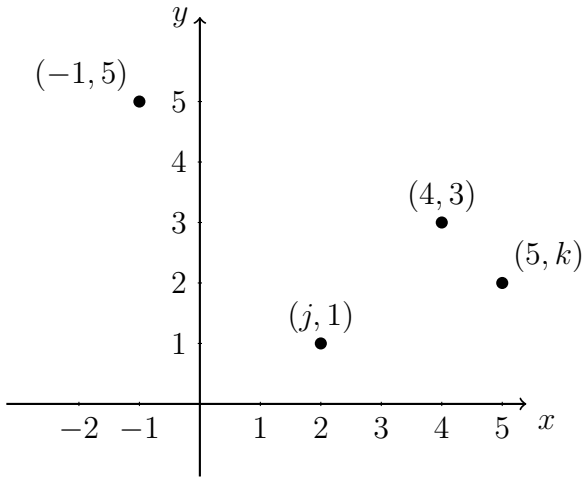
4. A relation composed of four points is plotted on the graph below, and represented as a set of ordered pairs as $\{(-1,5),(j,1),(4,3),(5,k)\}$.

(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.

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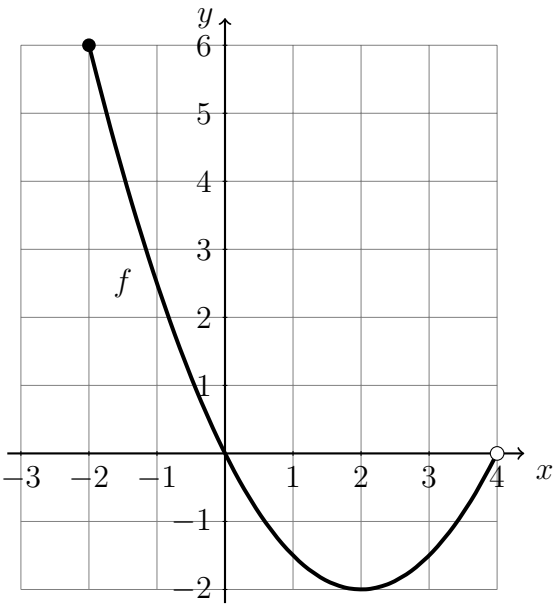
5. The graph of a function f is shown on the grid below.



(a) Write down $f(2)$

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

(c) Write down the domain.

(d) Write down the range.