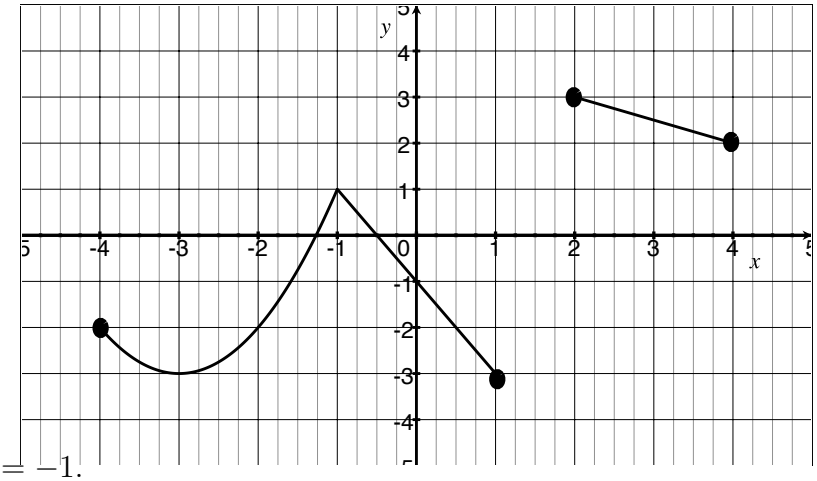
Some Practice

1. Find

$$\frac{\frac{2}{x^2} - x}{x - 2} + \frac{\frac{1}{2}(3x - 5)}{x^2 + 4} \qquad \frac{2 + 3i}{5i} \qquad (2 + 3i)(-1 + 5i)$$

2. Charles's Law states that at a constant pressure, the volume V of a gas is directly proportional to its temperature T (in Kelvin degrees). If a bicycle tube is filled with 1.2 cubic feet of air at a temperature of 295Km what will be the volume of the air in the tube if the temperature rises to 310K while the pressure stays the same?

3. Let f be the piece-wise defined function graphed to the right.



   (a) Find the domain of f.

   (b) Find $f(-1)$

   (c) Find $(f - f)(0)$

   (d) Find $(f \circ f)(2)$

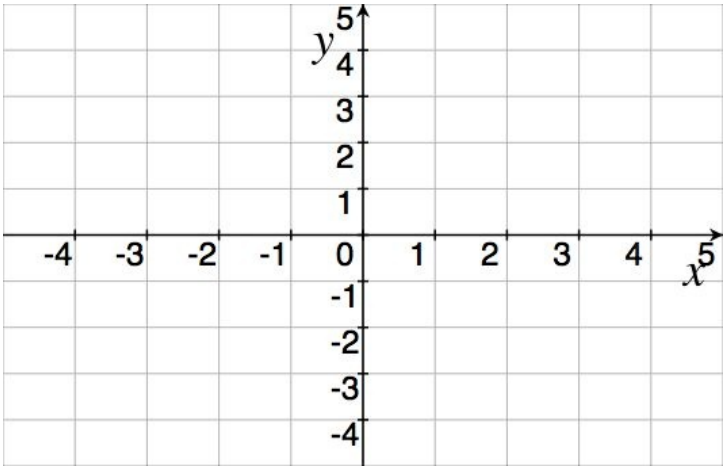
   (e) Estimate all x so that $f(x) = -1$.

   (f) Graph $m(x)$ where $m(x) = -\frac{1}{2}f(x - 1)$

   (g) Use graph transformations to write the rule of f in the form below.

$$f(x) = \begin{cases} & \text{if } -4 \le x \le -1 \\ & \text{if } -1 < x \le 1 \\ & \text{if } 2 \le x \le 4 \end{cases}$$

4. Let $g(x) = \begin{cases} \frac{1}{2}x - 2 & \text{if } -4 \leq x \leq 0 \\ 2(x-1)^2 - 4 & \text{if } 0 < x \leq 3 \end{cases}$



(a) Find $g(-2)$.

(b) Find $(g+g)(1)$

(c) Graph g.

(d) Find the range of g.

5. Consider the function $p(x) = x^2 + 5x + 10$

(a) Find vertex form of p.

(b) Find any real or complex roots of p.