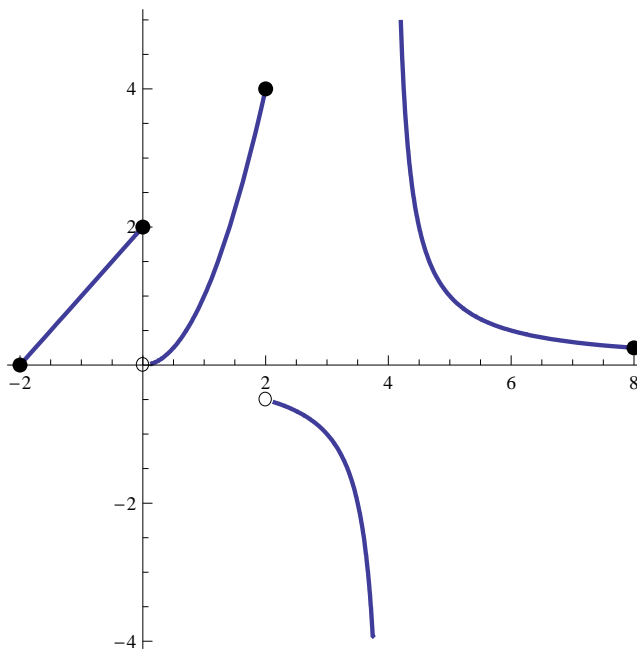


## Assignment #5

Name \_\_\_\_\_

Due 19 October 2009

1. The graph of a function  $f$  is pictured below. Answer the following questions.
  - (a) Find and classify the discontinuities of  $f$ . At each of the discontinuities, state whether  $f$  is nonetheless right continuous or left continuous.
  - (b) Is  $f$  continuous on  $[-2, 0]$ ? Explain.
  - (c) Is  $f$  continuous on  $[0, 2]$ ? Explain.
  - (d) Is  $f$  continuous on  $(2, 5)$ ? Explain.
  - (e) Is  $f$  continuous on  $(4, 8]$ ? Explain.

Figure 1: The graph of  $f$ 

2. Let

$$f(x) = \begin{cases} \frac{x^2 + x - 2}{|x - 1|} & \text{if } x \neq 1 \\ -3 & \text{if } x = 1 \end{cases}$$

Determine whether or not  $f$  is continuous at  $x = 1$ . If  $f$  is discontinuous there, determine whether it is nonetheless right or left continuous.

3. Use the method of bisection to estimate the root of the equation  $x^3 + 2x - 5 = 0$  to within .04.