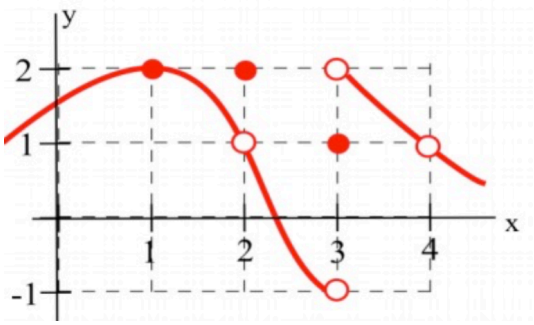
HW 5.2.1: Limits

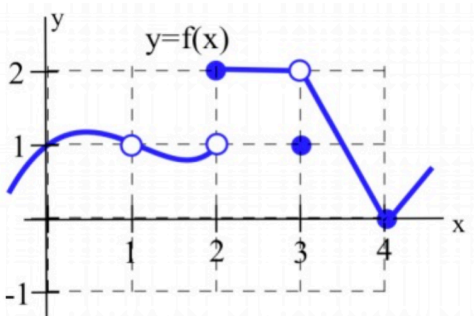
Graphical and Algebraic Techniques

1. Use the figure to the right to answer the following



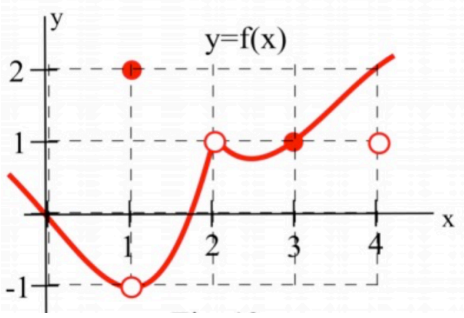
   a. $\lim_{x\to 2} f(x) =$
   b. $f(2) =$
   c. $\lim_{x\to 3^+} f(x) =$
   d. $\lim_{x\to 3^-} f(x) =$
   e. $\lim_{x\to 3} f(x) =$
   f. $f(3) =$
   g. $\lim_{x\to 4} f(x) =$

2. Use the figure to the right to answer the following



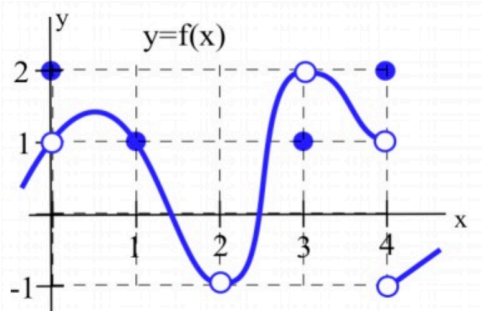
   a. $\lim_{x\to 1} f(x) =$
   b. $\lim_{x\to 2^-} f(x) =$
   c. $\lim_{x\to 2^+} f(x) =$
   d. $\lim_{x\to 2} f(x) =$
   e. $f(2) =$
   f. $\lim_{x\to 3} f(x) =$
   g. $f(3) =$

3. Use the figure to the right to answer the following



   a. $\lim_{x\to 1} f(x) =$
   b. $f(1) =$
   c. $\lim_{x\to 2} f(x) =$
   d. $f(2) =$
   e. $\lim_{x\to 3} f(x) =$
   f. $f(3) =$

4. Use the figure to the right to answer the following



   a. $\lim_{x\to 0} f(x) =$
   b. $f(0) =$
   c. $\lim_{x\to 2} f(x) =$
   d. $f(2) =$
   e. $\lim_{x\to 4} f(x) =$
   f. $f(4) =$

Find the limit if it exists

5. $\lim_{x\to 1}\dfrac{x^2+3x+2}{x-5}$

6. $\lim_{x\to 5}\dfrac{x^2+3x+2}{x-5}$

7. $\lim_{x\to 1}\dfrac{x^2-x-2}{x-1}$

8. $\lim_{x\to 0}\dfrac{x+9}{x^2+11x+18}$

9. $\lim_{x\to -9}\dfrac{x+9}{x^2+11x+18}$

10. $\lim_{x\to -2}\dfrac{x+9}{x^2+11x+18}$

11. $\lim_{x\to 0}\dfrac{\dfrac{1}{x+1}-1}{x}$

12. $\lim_{x\to 0}\dfrac{\dfrac{1}{2-x}-\dfrac{1}{2}}{x}$

13. $\lim_{x\to -4}\dfrac{x}{\dfrac{1}{4+x}-\dfrac{1}{4}}$

14. $\lim_{x\to -2}\dfrac{\dfrac{1}{2}+\dfrac{1}{x}}{2+x}$

Selected Answers:

1. a. 1 b. 2 c. 2 d.-1 e. DNE f. 1 g. 1
3. a.-1 b. 2 c. 1 d. undefined e. 1 f. 1
5. $-\frac{3}{2}$
7. DNE
9. $-\frac{1}{7}$
11. -1
13. 0