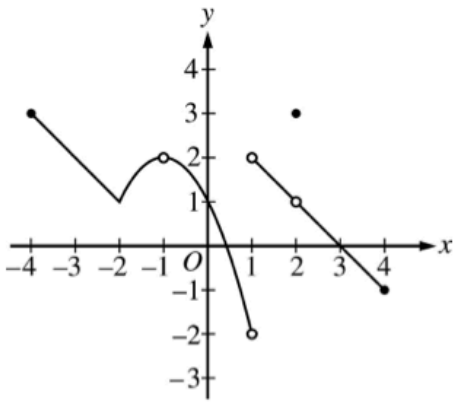
Unit 2 AP Exam Practice

You must show work or write an explanation for every problem to get full credit. Complete in AP Prep book.

Multiple Choice:

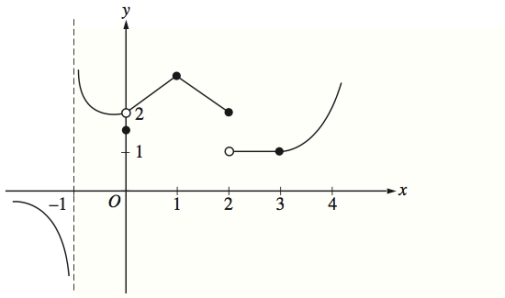


Graph of f

1. The graph of the function f is shown in the figure above. For how many values of x in the open interval $(-4, 4)$ is f discontinuous?
   (A) one
   (B) two
   (C) three
   (D) four

2. $\lim_{x\to\infty} \frac{\sqrt{9x^4+1}}{x^2-3x+5}$

   (A) 1 (B) 3 (C) 9 (D) Nonexistent



3. The graph of a function f is shown above. If $\lim_{x\to b} f(x)$ exists and f is not continuous at b, then $b =$
   (A) -1
   (B) 0
   (C) 1
   (D) 2
   (E) 3

4. Let f be a function defined by

$$f(x) = \begin{cases} 1 - 2sinx \; for \; x \le 0 \\ e^{-4x} \; for \; x > 0 \end{cases}$$

Show that f is continuous at $x = 0$.

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5. (You may use your calculator for this question)

$$r(t) = \begin{cases} \frac{600t}{t+3} \; for \; 0 \le t \le 5 \\ 1000e^{-0.2t} \; for \; t > 5 \end{cases}$$

Is r continuous at $t = 5$? Show the work that leads to your answer.

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6. Let f be a function defined by

$$f(x) = \begin{cases} \sqrt{x+1} \; for \; 0 \le x \le 3 \\ 5 - x \; for \; 3 < x \le 5 \end{cases}$$

Is f continuous at $x = 3$? Explain why or why not.