AP Calculus AB/BC   Worksheet "Continuity at a Point"   Name:

Directions: For each graph in #1-10, determine any points where the function is **not continuous (discontinuous)**

1)

2)

3)

4)

5)

6)

7)

8)

9)

10)

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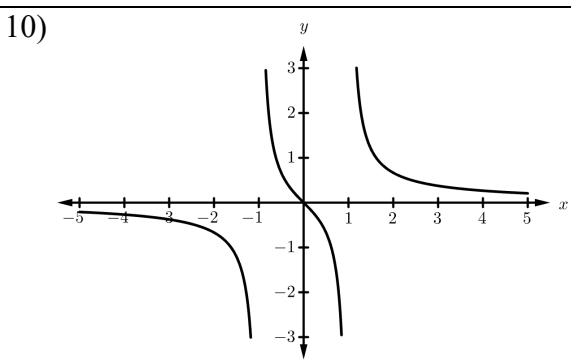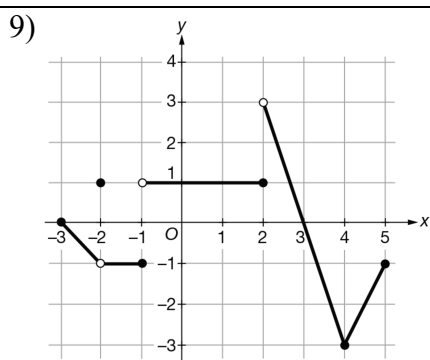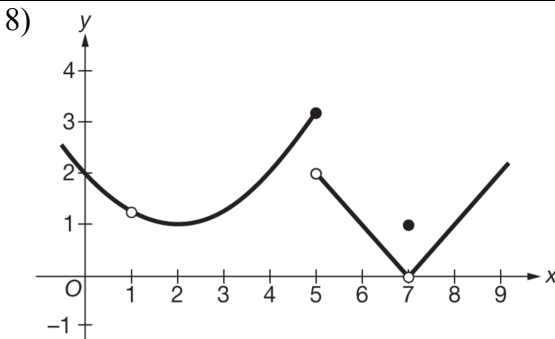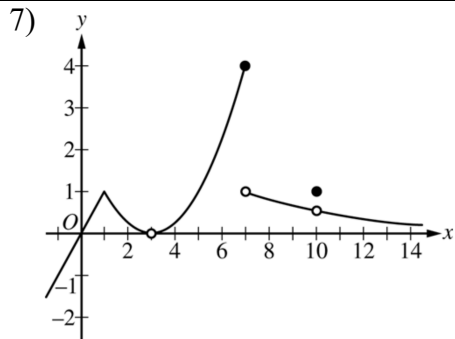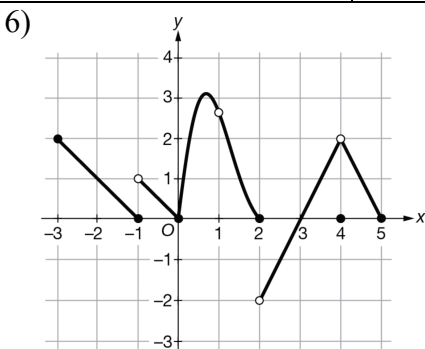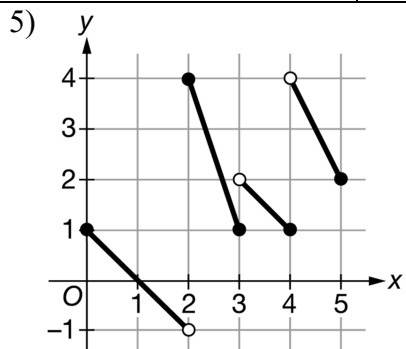
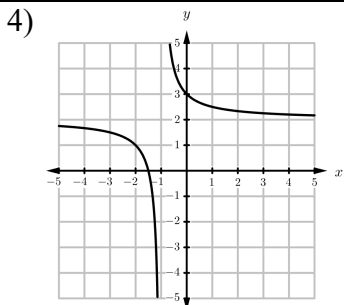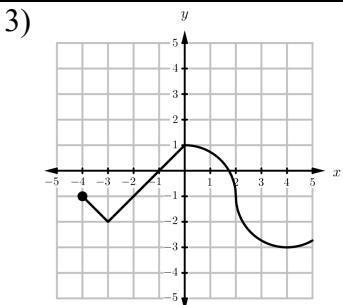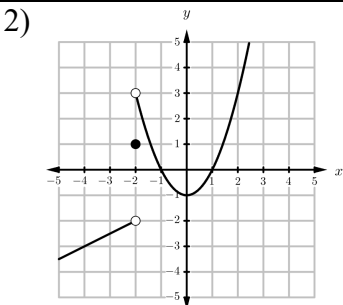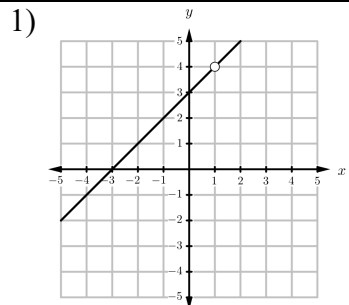Directions: For each piecewise function in #11-15, determine whether or not the function is continuous everywhere by testing the "suspect point". If discontinuous, state why.

11) $f(x) = \begin{cases} 5x + 7, & x < 3 \\ 7x + 1, & x \geq 3 \end{cases}$

12) $f(x) = \begin{cases} x^3, & x \leq 0 \\ x, & x > 0 \end{cases}$

13) $f(x) = \begin{cases} x^2, & x < 3 \\ 6x - 9, & x \geq 3 \end{cases}$

14) $f(x) = \begin{cases} \frac{x^2 - 4}{x - 2}, & x \neq 2 \\ 1, & x = 2 \end{cases}$

15) $f(x) = \begin{cases} x + 7, & x < 2 \\ 9, & x = 2 \\ 3x + 3, & x > 2 \end{cases}$

16) For what value(s) of k is the function $f(x) = \begin{cases} 3x^2 - 11x - 4, & x \leq 4 \\ kx^2 - 2x - 1, & x > 4 \end{cases}$ continuous at $x = 4$?

17) For what value(s) of k is the function $f(x) = \begin{cases} -6x - 12, & x < -3 \\ k^2 - 5k, & x = -3 \\ 6, & x > -3 \end{cases}$ continuous at $x = -3$?