PRE-CALCULUS · CLASSWORK · ADVANCED

Determine Continuity at a Point

SCORE / 25

01 Part A · Practice

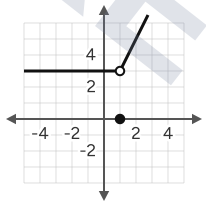
f is continuous at $x = c$ when (1) $f(c)$ is defined, (2) $\lim_{x \to c} f(x)$ exists, and (3) the limit equals $f(c)$.

EXAMPLE

Is $f(x) = x^2$ for $x < 2$, $f(x) = x + 2$ for $x \geq 2$ continuous at $x = 2$?

1. $f(2) = 2 + 2 = 4$ (defined).
2. Left: $2^2 = 4$; right: $2 + 2 = 4$, so the limit is 4.
3. Limit = $f(2)$: continuous.

1 ●○○ The graph of $y = f(x)$ is shown. Is f continuous at $x = 1$? If not, which condition fails?



2 ●○○ Is $f(x) = \begin{cases} x^2 - 2, & x < -2 \\ -4x - 6, & x \geq -2 \end{cases}$ continuous at $x = -2$? Explain.

3 ●○○ $f(x) = \begin{cases} x^2 - 4, & x < -4 \\ 9, & x = -4 \\ 3x + 24, & x > -4 \end{cases}$. Find $f(-4)$ and $\lim_{x \to -4} f(x)$. Is f continuous at $x = -4$?

4 ●○○ $f(x) = \dfrac{x^3 - 5x^2 + 4x + 6}{x - 3}$ for $x \neq 3$ and $f(3) = 1$. Is f continuous at $x = 3$?

PREVIEW

Preview - the full worksheet and its answer key are at primeworksheet.com