

Mini-math Div 3/4: Monday, September 21, 2020

- (1) True or false: The value of $\lim_{x \rightarrow a} f(x)$ is $f(a)$, assuming $f(a)$ is defined.
- (2) True or false: $\lim_{x \rightarrow a} f(x)$ can only exist if the left and right limits exist and are equal.
- (3) What method would you use to solve

$$\lim_{h \rightarrow 0} \frac{(2+h)^2 - 4}{h}?$$

For an extra half point, what is the limit?

- (4) What method would you use to solve

$$\lim_{x \rightarrow 9} \frac{\sqrt{x} - 3}{x - 9}?$$

For an extra half point, what is the limit?

- (5) What method would you use to solve

$$\lim_{x \rightarrow 2} \frac{x^2 + x + 1}{3x^2 + 1}?$$

For an extra half point, what is the limit?

- (6) What method would you use to solve

$$\lim_{x \rightarrow 2} \frac{|x - 2|}{x - 2}?$$

For an extra half point, what is the limit?

- (7) Where is the following function discontinuous? Identify the type of discontinuity, if any.

$$f(x) = \begin{cases} 0 & \text{if } x \leq 0 \\ x & \text{if } 0 < x < 2 \\ 1 & \text{if } x \geq 2 \end{cases}$$

- (8) If $s(t)$ represents the position of a particle at time t , write an expression which represents the velocity of the particle at time $t = a$.
- (9) What method would you use to solve

$$\lim_{n \rightarrow \infty} \frac{3n^2 + 1}{2n^2 - 4n + 1}?$$

For an extra half point, what is the limit?

- (10) Find the sum of

$$\sum_{n=2}^{\infty} 2 \cdot \frac{1}{3^n}$$