1. Determine the equations of the relevant asymptotes of the following rational functions.
   (a) \( f(x) = \frac{2x + 10}{x + 1} \)
   (b) \( f(x) = \frac{(x - 1)^2}{x^2 + 1} \)
   (c) \( f(x) = \frac{x^2 - 2x + 1}{x^2 + 3x + 1} \)

2. Determine the equations of the relevant asymptotes of the following non-rational functions.
   (a) \( f(x) = \frac{2e^x + 10e^{-x}}{e^x + e^{-x}} \)
   (b) \( f(x) = \frac{x - 1}{\sqrt{x^2 + 1}} \)
   (c) \( f(x) = \frac{x^2 - 2x + \cos(x)}{x^2 + \ln(x) + 1} \)

3. Which of the following functions are continuous for all values in their domain? Justify your answers.
   (a) \( a(t) = \) altitude of a skydiver \( t \) seconds after jumping from a plane.
   (b) \( n(t) = \) number of quarters needed to park in a metered parking space for \( t \) minutes.
   (c) \( T(t) = \) temperature \( t \) minutes after midnight in Chicago on January 1.
   (d) \( p(t) = \) number of points scored by a basketball player after \( t \) minutes of a basketball game.

4. A monk set out from a monastery in the valley at dawn. He walked all day up a winding path, stopping for lunch and taking a nap along the way. At dusk, he arrived at a temple on the mountaintop. The next day, the monk made the return walk to the valley, leaving the temple at dawn, walking the same path for the entire day, and arriving at the monastery in the evening. Must there be one point along the path that the monk occupied at the same time of day on both the ascent and descent?

5. The function \( f \) in the figure satisfies \( \lim_{x \to 2} f(x) = 5 \).

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Week 3, Recitation 1

![Graph representing \( f(x) = 5 \).]

Determine the largest value of \( \delta > 0 \) satisfying each statement.
   (a) If \( |x - 2| < \delta \) then \( |f(x) - 5| < 2 \).
   (b) If \( |x - 2| < \delta \) then \( |f(x) - 5| < 1 \).