Set 4_Q3 Evaluate the following limit. $\lim_{x \to 1^-} (1 - x^2)$

Problem Solving - What are the terms/strategies I may need? What do I know?

- Limits
  - One-sided limits of functions

$$\lim_{x \to a^+} f(x) = L$$

$$\lim_{x \to a^-} f(x) = L$$

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Steps & Process – Try to answer the question writing in many steps to avoid small errors.

In this case, we have to evaluate an one-sided limit, from the left. This means that x approaches 1 infinitely closely. Since it is from the left side, the "value" of x is slightly smaller than 1. So when evaluating the one-sided limit, we have to keep in mind that x is not equal to 1, it's smaller than 1.

$$\lim_{x \to 1^-} (1 - x^2) \qquad = (1 - (1)^2) \qquad = 0$$

So the one-sided limit is equal to zero, and it did not matter that x was smaller than 1.

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Solidify Understanding – Explain why the steps makes sense by connecting to math you know.

Why are we studying limits? Why are they important?

What is the difference between left-sided and right-sided limits?

Why would we evaluate the one-sided limit at a point?

For Video Please click the link below:

Video