MA 507

Section 2.5 Introduction

Topics:

- Review of Limits and Continuity
- Limits can be ∞ (or $-\infty$) (vertical asymptotes)
- Limits at ∞ (horizontal asymptotes)
- Desmos Activity

Review Solve these limits

1. $\lim_{x\to 2} \frac{x^2-4x-5}{x-5}$
2. $\lim_{x\to 4} ln(x^2-3x-3)$
3. $\lim_{x\to 2^-} \frac{x+1}{x-2}$

Limits that go to infinity We have learned that functions that have vertical asymptotes have limits that don't exist. And that is true. But we are going to be a little "more expressive" about how vertical asymptotes are expressed in limits.

In words:

The notation _____ means that the values of _____ can be made _____ large by taking _____ sufficiently close to _____ (on either side) but not equal to _____.

Limits at infinity Horizontal asymptotes

Horizontal asymptotes are another example of a limit. They tell us what the values the function gets closer to as the values for x get extremely big or extremely small.

The notation _____ means that the values of _____ can be made _____ close to _____ by taking _____ sufficiently _____.

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