Exercises

1. If $y = \dfrac{x^2 + 3x + 2}{x^2 - 4}$, does the graph have a horizontal asymptote? a vertical asymptote? How do you know?

2. Determine $\displaystyle\lim_{x \to 2} \frac{\sqrt{x-1} - 1}{x - 2}$ and $\displaystyle\lim_{x \to \infty} \frac{\sqrt{x-1} - 1}{x - 2}$.

3. Sketch a graph of a function f that has all of the following properties: $f(0) = 1$, $f(2) = 3$, $\displaystyle\lim_{x \to 1^-} f(x) = \infty$, $\displaystyle\lim_{x \to 1^+} f(x) = 2$, $\displaystyle\lim_{x \to \infty} f(x) = 0$, $\displaystyle\lim_{x \to -\infty} f(x) = -1$.

Assignment

Be prepared for a quiz in class tomorrow (Thursday, January 24) on the following topics:

1. vector projection,
2. identifying limits by looking at a graph,
3. computing limits from a formula for $f(x)$.