Calculus I **Fall 2014**

More limits

Discussion session 4 - 4 September 2014

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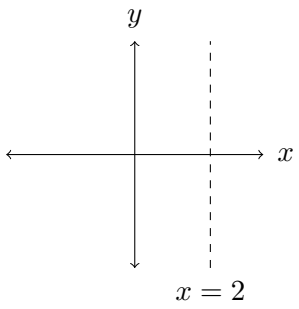
1. Consider the piecewise function below, and find $\lim_{x\to 2^{\pm}}[f(x)]$ and $\lim_{x\to 5^{\pm}}[f(x)]$.

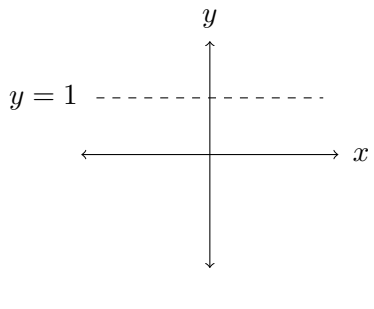
$$f(x) = \begin{cases} 6x - 1 & \text{if } x \leqslant 2, \\ 3x^2 - x & \text{if } 2 < x \leqslant 5, \\ 2x^2 + 3x + 5 & \text{if } x > 5. \end{cases}$$

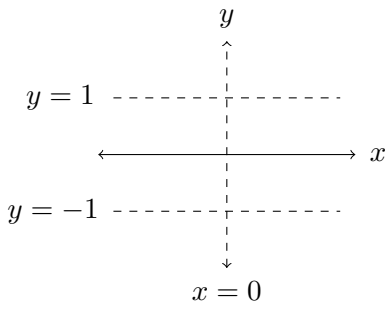
2. Calculate the limit

$$\lim_{x\to -\infty}\left[\frac{x^4 + x^3 + 1}{3x^4 + \sqrt{x^8 + 3}}\right].$$

3. Draw on the axes below the graph of three functions that have the indicated asymptotes.







4. Write down a formula for one of the graphs above. Redraw the graphs if necessary.