HW 4: Section 1.4

Due: Monday, September 16th in SQRC by 9pm

Learning Goals:

- Evaluate limits of polynomials, rational functions, trig functions, exponential functions, logarithmic functions, and piece-wise functions.
- Evaluate limits of the product and quotient of functions.

Questions:

1. Problem 1.4.8.Determine where $x\cot(x)$ is continuous.
2. Problem 1.4.16. Explain why the function $\dfrac{x^2-1}{x-1}$ fails to be continuous at $x=1$ by indicating which of the three conditions of definition 4.1 (really read the remark 4.1 next to the definition) are not met.
3. Problem 1.4.16. Explain why the function $\dfrac{e^{x-1}}{e^x-1}$ fails to be continuous at $x=0$ by indicating which of the three conditions of definition 4.1 (really read the remark 4.1 next to the definition) are not met.
4. Problem 1.4.22. Determine the interval on which $\sqrt{x^2-4}$ is continuous.
5. Problem 1.4.38. Use the graph (in the book) to identify all intervals on which the function is continuous.
6. Problem 1.4.40. Determine values of a and b that make the function continuous

$$f(x)=\begin{cases} ae^x+1 & \text{if } x<0 \\ \arcsin\left(\frac{x}{2}\right) & \text{if } 0\le x\le 2 \\ x^2-x+b & \text{if } x>2 \end{cases}$$