Instructions. Put your first and last name at the top of your paper. Everyone is to do their own worksheet but only one from each group is graded with the score shared. Be sure to show your work and explain your reasoning, present your solutions in an intelligible fashion, and circle your answer. Staple all of your group’s work together, and give it to your TA at the end of the Discussion Section.

1. Why is the equation

\[
\lim_{t \to 2} \frac{t^2 + t - 6}{t - 2} = 5 \quad (1)
\]

true, while

\[
\frac{t^2 + t - 6}{t - 2} = t + 3 \quad (2)
\]

is false?

2. Evaluate the limits, if they exist. If they don’t exist, explain why. If they do exist, show your work and/or explain your reasoning.

(a) \( \lim_{x \to 2} x^4 + 1 \)

(b) \( \lim_{t \to 2} \frac{t^2 + t - 6}{t - 2} \)
(c) \[ \lim_{h \to 0} \frac{(2 + h)^3 - 8}{h} \]

(d) \[ \lim_{x \to -1} 2(x + 1)^2 \sin \left( \frac{1}{x + 1} \right) \]

3. Sketch the graph of a function \( f \) with the properties that

\[ \lim_{x \to 2^-} f(x) = 2 \quad f(2) = 5 \quad \lim_{x \to 2^+} f(x) = 4 \]