Problem statement a) Suppose $f(x) = \dfrac{e^{10x}}{1 + e^{10x}}$. Graph this function when $-5 \le x \le 5$, and find the notable features of this graph, including any local extrema, points of inflection, and asymptotes. Sketch a plausible graph of $\dfrac{e^{10,000x}}{1 + e^{10,000x}}$

b) Suppose $g(x) = \dfrac{x^{10}}{1 + x^{10}}$. Graph this function for $-5 \le x \le 5$, and find the notable features of this graph, including any local extrema, points of inflection, and asymptotes. Sketch a plausible graph of $\dfrac{x^{10,000}}{1 + x^{10,000}}$

Note Such functions may serve as appropriate models for biophysical phenomena where rate constants in reactions are very different from everyday time scales. The curves sketched in a) are called *logistic curves.*