

Assignment 3 – Part 1 – Math 241

These exercises are taken from the textbook (Hass, Weir, and Thomas' *University calculus alternate edition* or *UH Mānoa custom edition*).

Section 2.4: 38, 40, 42, 44

Other problems:

(Q1) Evaluate the following limits.

(a) $\lim_{x \rightarrow \infty} 1 + \frac{1}{\sqrt{x}}$

(b) $\lim_{x \rightarrow -\infty} \left(2 - \frac{1}{x}\right)^3$

(Q2) Determine the horizontal asymptotes for

$$f(x) = \frac{2 + \frac{1}{x}}{3 + \frac{1}{x^3}}.$$

(Q3) Determine the horizontal *and* vertical asymptotes for

$$g(x) = \begin{cases} x^2 & \text{if } x > 0 \\ 1/x^2 & \text{if } x < 0. \end{cases}$$