

Assignment 4 – All 2 parts – Math 241

Due in class: Tuesday, Feb. 6, 2018

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

Section 2.5: 2, 6, 8, 12, 18, 20, 40, 42

Section 2.6: 6, 16, 36, 38, 40

Other problems:

(Q1) Determine the horizontal *and* vertical asymptotes for the following functions.

$$(a) f(x) = \frac{x^2 - 1}{x^2 - 3x + 2}$$
$$(b) f(x) = \begin{cases} \frac{x}{x+1}, & x < 0 \\ \tan(x), & 0 \leq x < \pi/2 \\ \frac{2x^2 + 1}{x^2 + 1}, & \pi/2 \leq x. \end{cases}$$

(Q2) Show that the function $f(x) = \frac{x^2 - 9}{x^2 - 4x + 3}$ has a removable discontinuity at $x = 3$ and write down a formula for its continuous extension to $x = 3$. Is the discontinuity at $x = 1$ removable? Why, or why not?