Homework for week 2
From the Textbook:

- Section 2.5: 1-38

- Section 2.4: 1-12, 17-68, 73-80

Problem 1. Evaluate each limit using algebraic techniques

i $\lim\limits_{x \to 0} \dfrac{x^2 - 25}{x^2 - 4x - 5}$

ii $\lim\limits_{x \to \infty} \sqrt[3]{\dfrac{x - 3}{5 - x}}$

iii $\lim\limits_{x \to -2} \dfrac{x^4 + 5x^3 + 6x^2}{X^2(X + 1) - 4(X + 1)}$

Problem 2. For the function

$$f(x) = \begin{cases} \sin \pi x & x < 1 \\ 2^{x^2} & x > 1 \end{cases}$$

Evaluate:

i) $f(1) =$

ii) $\lim\limits_{x \to 0} f(x)$

iii) $\lim\limits_{x \to 1} f(x)$

Problem 3. For the function

$$f(x) = \begin{cases} t^2 & t < -2 \\ \dfrac{t + 6}{t^2 - t} & -1 < t < 2 \\ 3t - 2 & t \geq 2 \end{cases}$$

Evaluate:

i) $f(-3/2) =$

ii) $f(2)$

iii) $f(3/2)$

iv) $\lim\limits_{t \to -2} f(t)$

v) $\lim\limits_{t \to 1^+} f(t)$

vi) $\lim\limits_{t \to 2} f(t)$

vii) $\lim\limits_{t \to 0} f(t)$