

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 $\lim_{x \rightarrow 0} \frac{x^2 - 25}{x^2 - 4x - 5}$

ii $\lim_{x \rightarrow \infty} \sqrt[3]{\frac{x-3}{5-x}}$

iii $\lim_{x \rightarrow -2} \frac{x^4 + 5x^3 + 6x^2}{X^2(X+1) - 4(X+1)}$

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) $\lim_{x \rightarrow 0} f(x)$

iii) $\lim_{x \rightarrow 1} f(x)$

Problem 3. For the function

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

Evaluate:

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

ii) $f(2)$

iii) $f(3/2)$

iv) $\lim_{t \rightarrow -2} f(t)$

v) $\lim_{t \rightarrow 1^+} f(t)$

vi) $\lim_{t \rightarrow 2} f(t)$

vii) $\lim_{t \rightarrow 0} f(t)$