

1.1 Practice (Introduction to limits)

"Calculus is the study of limits."

Ex 1 Find the limit

(a) $\lim_{t \rightarrow -2} (t^2 - 2x^2)$

(b) $\lim_{x \rightarrow 0} \frac{3x^3 + 2x^2 - x^4}{x^2}$

(c) $\lim_{t \rightarrow 7^+} \frac{\sqrt{(t-7)^5}}{7-t}$

1.1 Practice (Introduction to limits)

Ex 2 Find the limits.

(a) $\lim_{x \rightarrow 3} \frac{[x]}{x}$

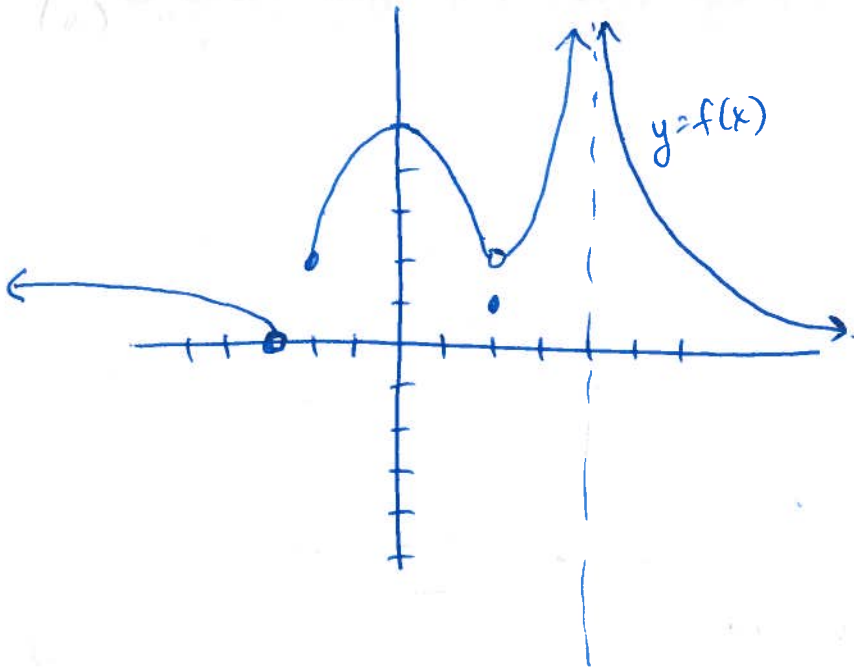
(b) $\lim_{x \rightarrow 1.6} \frac{[x]}{x}$

(c) $\lim_{x \rightarrow 0^+} \frac{[x]}{x}$

(d) $\lim_{x \rightarrow 0^-} \frac{[x]}{x}$

(e) $\lim_{x \rightarrow 0} \frac{[x]}{x}$

Ex3 For this graph, find the indicated limits.



(a) $\lim_{x \rightarrow 3^-} f(x)$

(b) $\lim_{x \rightarrow -2^+} f(x)$

(c) $\lim_{x \rightarrow 2} f(x)$

(d) $f(2)$

(e) $\lim_{x \rightarrow 4^-} f(x)$

(f) $\lim_{x \rightarrow 4^+} f(x)$

1.3 Practice (Limit Theorems)

Ex1 Find these limits.

$$(a) \lim_{x \rightarrow -3} \frac{x^2 - 14x - 51}{x^2 - 4x - 21}$$

$$(b) \lim_{x \rightarrow -1} \frac{x^2 + x}{x^2 + 1}$$

$$(c) \lim_{x \rightarrow -1^+} \frac{\sqrt{1+x}}{5+5x}$$

Ex2 Find the limits. (Theorems) in limit laws

$$(a) \lim_{x \rightarrow 4} \frac{x-4}{\sqrt{x}-2}$$

$$(b) \lim_{x \rightarrow -\pi^+} \frac{\sqrt{\pi^3 + x^3}}{x}$$