

Modul 3A PRACTICE EXAM.

1. Draw the motion diagram for

$$s = f(t) = t^3 - 4t^2 + 3t$$

indicating position at $t = -1, 0, 1, 2, 3, 4$

2. Draw the mapping diagram for

$$f(x) = x^3 \quad \text{using } x = -\frac{1}{2}, 0, \frac{1}{2}, 1, \frac{3}{2}, 2$$

3. Determine

a) $\lim_{n \rightarrow \infty} 2^n$

b) $\lim_{n \rightarrow \infty} 2^{-n}$

c) $\lim_{n \rightarrow \infty} \frac{(-1)^n}{n}$

d) $\lim_{n \rightarrow \infty} \sin \frac{n\pi}{2}$

4. Find

a) $\lim_{t \rightarrow \infty} \frac{t^2 + 2t + 1}{t^3 + 3t + 1}$

b) $\lim_{x \rightarrow 0} \frac{\sin \pi x}{x}$

5. a) Define: $f(x)$ is continuous at $x=c$

b) Show that $f(x) = x^5 + 6x^2 + 1$ is continuous

c) at every point c (use Limit LAWS!)

d) Show that $x^5 + 6x^2 + 1 = 0$ has a solution.

6. Define a function $f(x)$ such that $\lim_{x \rightarrow 2} f(x)$

exists but $\lim_{x \rightarrow 2} f(x) \neq f(2)$