COMPUTER ENGINEERING

CALCULUS 1

3/11/2017

* Solve just four questions

1) Show that $\sqrt{16+2x} = 9-x^2$ has at least one real root (use IVT)
$(3-x)(3+x)$
Give detailed solution and express IVT in details.
IVT: Intermediate Value Theorem.

2) Show that for any numbers (real numbers) a and b the given inequality is true $|\sin b - \sin a| \leq (b-a)$
$(-1 \leq \sin \leq 1)$

3) $y = \ln \frac{1}{x^2}$ Determine asymptote(s) of given function. (if any)

4) A particle on $y = 2 \cdot x^{3/2}$ is approaching origin by the rate of change of 16 m/sec
Find $\frac{dx}{dt}$ when $x = 4m$
Rate of change of the distance between the particle and origin

5) If $\int_0^{f(x)} t^2 dt = x\cos(\pi x)$
then evaluate $f(4)$.

6) Evaluate $\int \frac{\ln x}{x + x\ln x} dx$

50 min.