

King Fahd University of Petroleum and Minerals
Department of Mathematics & Statistics
Math101.03
Semester 092
Quiz (2)

Name:

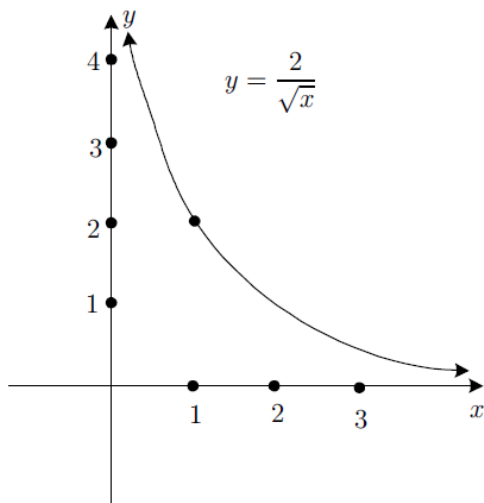
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1. Use the graph of $f(x) = \frac{2}{\sqrt{x}}$ to find a number δ such that

$$\text{if } 0 < |x-1| < \delta \text{ then } |f(x)-2| < \frac{1}{2}$$

[1 point]



2. Prove the statement using the ε, δ definition of limit :

$$\lim_{x \rightarrow 1} \left(-1 + \frac{3}{2}x \right) = \frac{1}{2}$$

[2 points]

3. Find a constant k that makes the function

$$f(x) = \begin{cases} x^2 - k^2 & \text{if } x \leq 2 \\ kx + 5 & \text{if } x > 2 \end{cases}$$

continuous on $(-\infty, \infty)$.

[2 points]

4. Show that the equation $e^x = -1 - 2x$ has a root in the interval $(-1, 0)$.

[1 point]

5. Find the domain of each function:

(a) $f(x) = \frac{\ln x}{\sqrt{2x-2}-4}$

[1 point]

(b) $f(x) = \frac{4}{1-e^{\sqrt{x}}}$

[1 point]

Good luck
Khaled Al-Anezy