

MATH 170 – Section 008 – Quiz 1

You may work with other class members on this quiz, but you may *not* receive assistance from people not in MATH 170 (Section 008). You must show all of your work to receive full credit. Do all your work on other sheets of paper and be sure to staple all the pieces of paper together or YOU WILL GET A 'ZERO' ON THE QUIZ. Do not use decimal approximations unless asked to do so. Your work on this quiz must be handed in by Monday, 24 January 2005 at 1540. GOOD LUCK!

1) Find the domain of $f(x) = (3 - x)^{-1/2}$. Write your answer in interval notation.

2) Write $f(x) = \sin^2 3x$ as the composition of three simpler functions.

3) Find the inverse of the function $f(x) = \sqrt{5 - 2x}$.

4) Suppose the position (in inches) of a particle after t seconds is given by

$$s(t) = t^2 + 3t.$$

Use the technique of Section 2.1 of the text to make an educated guess for the velocity of the particle after 2 seconds. Compute at least four average velocities as part of your work.

5) Let $f(x)$ be defined by

$$f(x) = \begin{cases} x & \text{if } x \text{ is an integer} \\ 1 - x & \text{if } 0 < x < 1 \\ x - 1 & \text{if } 1 < x < 2 \\ 5 - x & \text{if } x > 2 \end{cases}$$

For each of the limits given below, either a) evaluate the limit and explain your reasoning or b) explain why the limit does not exist.

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

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

c) $\lim_{x \rightarrow 3} f(x)$

6) Find all solutions of the equation

$$\cos 2\theta = \sin \theta$$