

MATH 022 Section 006
Spring 2008
QUIZ 8 Mock

1. Find the range of the function $g(x) = -x^2 + 2x + 2$.

- a) $[1, \infty)$
- b) $(-\infty, 1]$
- c) $(-\infty, 3]$
- d) $[3, \infty)$

2. A rectangular four-cell pen is constructed using two walls in a barn that meet at a corner at right angles. The two remaining sides and three inner separating walls of the pen are constructed using 120 ft of fencing. (The inner separating walls are at right angles to the long side of the rectangle and are parallel to each other). Determine the largest possible total area that may be so enclosed.

- a) 360 ft^2
- b) 120 ft^2
- c) 720 ft^2
- d) 100 ft^2

3. If $f(x) = \frac{1}{x-7}$ and $g(x) = \sqrt{x}$, find the domain of $(g \circ f)(x)$ and compute its average rate of change over the interval $[9, 25]$.

- a) $[0, \infty); \frac{-1}{4}$
- b) $[0, 49) \cup (49, \infty); \frac{-1}{64}$
- c) $(0, 7) \cup (7, \infty); \frac{-\sqrt{2}}{3}$
- d) $(7, \infty); \frac{-\sqrt{2}}{48}$

4. Determine which of the following functions is one-to-one.

a) $f(x) = x^2 - 2x$

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

c) $f(x) = \frac{1}{x^2 - 4}$

d) $f(x) = x^4$

5. Find the inverse function $f^{-1}(x)$ if $f(x) = \frac{x-1}{x+2}$.

a) $f^{-1}(x) = \frac{2x+1}{x-1}$

b) $f^{-1}(x) = \frac{2x+1}{1-x}$

c) $f^{-1}(x) = \frac{1-2x}{x+1}$

d) $f^{-1}(x) = \frac{x+2}{x-1}$