

Quiz 3 Solutions
MAC 1147.3079, Fall 2015
Thursday, September 24, 2015

Show all relevant work to support your answer. A correct answer without supporting work will not earn the points. **Problems 3 and 4 are on the back.**

1. (1 point) What is your favorite joke? (Hint: There is no wrong answer)

1. _____

2. (4 points) If $f(x) = \sqrt{x-1}$ and $g(x) = x^2 + 2$, determine the following:
(a) the parent function of f .

Solution: The parent function of f is \sqrt{x} .

- (b) $(g \circ f)(x)$ and its domain.

Solution: First, we find $(g \circ f)(x) = (\sqrt{x-1})^2 + 2 = x + 1$. Now, to find the domain of $(g \circ f)$, we intersect the domains of f with $x + 1$. Since the domain of f is $[1, \infty)$ and the domain of $x + 1$ is $(-\infty, \infty)$, the solution is $[1, \infty)$.

3. (2 points) Suppose that $f(3) = 7$ for some function f . If f is an odd function, then which one of the points below is also on the graph of f ?

- A. $(-3, -7)$
- B. $(7, 3)$
- C. $(-3, 7)$
- D. $(3, -7)$

Solution: The "classic" example of an odd function is $y = x$. Hence, envisioning the shape of x with the point $(3, 7)$, we must have the point $(-3, -7)$ also on the graph.

4. (3 points) If $g(x) = \begin{cases} x^2 & \text{if } x \leq -1 \\ -1 & \text{if } -1 < x \leq 0 \\ \frac{1}{x} & \text{if } x > 0 \end{cases}$ find $g(-2) + g(0) + g(1)$.

Solution: Being careful with the domains of the piecewise solution, we see

$$g(-2) + g(0) + g(1) = (-2)^2 + (-1) + \frac{1}{1} = 4 - 1 + 1 = 4.$$