

Quiz 3 — 28 January 2020

Answer the questions in the spaces provided. **Show all of your work and circle the answer you would like to have graded for each question.**

Name and section: \_\_\_\_\_

1. Given one-to-one functions  $f(x) = x^3 + 4$  and  $g(x) = \sqrt[3]{x - 4}$ , verify that  $g = f^{-1}$ .
  
  
  
  
  
  
  
  
  
  
2. Let  $f(x) = |3x|$  and  $g(x) = \sqrt{x}$ .
  - (i) Evaluate  $(g \circ f)(-3) + (f \circ g)(4)$ .
  
  
  
  
  
  
  
  
  
  
  - (ii) Define a new function  $h$  by shifting  $f$  to the left by 4 units and down by 3 units. Express  $h$  as a function of  $x$ .
  
  
  
  
  
  
  
  
  
  
3. Given the one-to-one function  $f(x) = \frac{2}{x - 3}$ , state the range of  $f^{-1}$  in interval notation.