

Quiz 5 — 11 February 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. Let  $q$  be the quadratic function with vertex  $(2, 7)$  and a  $y$ -intercept of  $-5$ .
  - (i) Write  $q$  as a function of  $x$  in standard form.
  
  
  
  
  
  
  
  
  
  
  - (ii) If the line  $L_1$  passes through both the  $y$ -intercept and the vertex of  $q$ , what is the slope of  $L_1$ ?
  
  
  
  
  
  
  
  
  
  
  - (iii) Suppose the line  $L_2$  is perpendicular to  $L_1$  and passes through the vertex of  $q$ . Write an equation that gives  $L_2$ .
  
  
  
  
  
  
  
  
  
  
2. Consider the complex number  $\alpha = (2 - i + i^2 - i^3)(3 + 5i) + 7 - 4i$ .
  - (i) Write  $\alpha$  in the form  $a + bi$  with  $a$  and  $b$  real numbers.
  
  
  
  
  
  
  
  
  
  
  - (ii) Let  $\beta$  be the complex conjugate of  $\alpha$ . Compute the product  $\alpha\beta$ .