

**MATH 166**  
**SUMMER 2011**  
**QUIZ 2**

1. Consider the functions  $f(x) = x^3 + x^2$  and  $g(x) = x^3 + x + 2$ .
  - a) (5 pt) Sketch these two functions together and indicate the region bounded by them.
  - b) (5 pt) Find the area bounded by these two curves.
  - c) (5 pt) Find the volume obtained when the region bounded by these curves is revolved about the  $x$ -axis.
  
2. Consider the function  $f(x) = \int_{x^2}^{x^4} \ln(t) dt, x > 0$ .
  - a) (5 pt) Find  $f'(x)$ .
  - b) (5 pt) Find all critical numbers (again  $x > 0$ ).
  - c) (5 pt) Give a rough sketch of  $f(x)$  indicating where you get your information.