8-1A Lesson Master

Questions on SPUR Objectives

**SKILLS** Objective A

1. Suppose \( f(x) = 4x^2 \) and \( g(x) = x + 7 \).
   
   a. Evaluate \( f(g(3)) \). ________________  
   
   b. Evaluate \( g(f(3)) \). ________________  
   
   c. Based on Parts a and b, is composition of functions commutative? ________________

2. Suppose \( p(a) = a^3 \) and \( q(a) = 4a - 7 \). Evaluate the expression.
   
   a. \( p \circ q(4) \) ________________  
   
   b. \( q \circ q(4) \) ________________

3. Suppose \( u(x) = \frac{9}{x} \) and \( v(x) = 2x - 8 \).
   
   a. Evaluate \( u(v(x)) \). ________________

   b. **Fill in the Blank** The domain of \( u(v(x)) \) is ________________.

   c. Evaluate \( v(u(x)) \). ________________

   d. **Fill in the Blank** The domain of \( v(u(x)) \) is ________________.

**USES** Objective H

4. Two different stores sell the same computer printer. Store A offers a $50 in-store discount; Store B offers a $50 mail-in rebate. The local sales tax is 7% on the price you pay in the store. Let \( x \) be the original price.
   
   a. Write an equation \( r(x) \), the price after the discount if the discount is taken first, for Store A. ________________

   b. Write an equation \( t(x) \), the price after the sales tax if the tax is calculated before the rebate for Store B. ________________

   c. Find \( r(t(\$269)) \). ________________

   d. Find \( t(r(\$269)) \). ________________

   e. Which store’s final price is represented by \( t(r(x)) \)? ________________

5. The Dubows are installing a brick patio. The bricks they choose are 4 inches by 8 inches. They have several different patio designs to choose from.

   a. If a design covers an area of \( F \) square feet, write an equation for \( n(F) \), the number of bricks they will need. ________________

   b. If the cost of building the patio is $1200 for labor plus $0.69 per brick, write an equation for \( c(B) \), the cost of building a patio with \( B \) bricks. ________________

   c. Find the cost of building a patio that covers \( F \) square feet. ________________