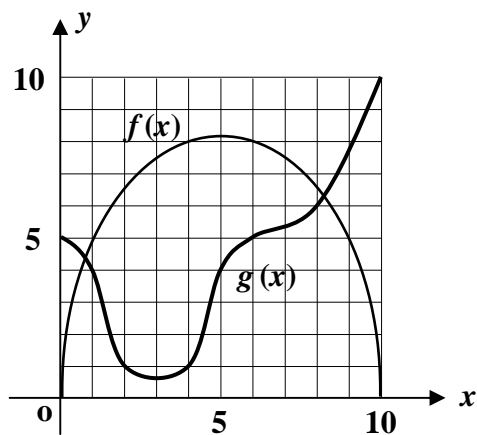


## HW 11 Due 04/30/14

- 1) Solve  $\cos 2\theta + 0.21 \cos \theta = 0$  for  $0 \leq \theta < 2\pi$ . **Hint:** Example 8 from posted lesson 7.2.
- 2) Using the following figure, find (a)  $f(g(5))$  (b)  $g(f(6))$  (c)  $f(f(9))$  (d)  $g(g(8))$   
Round answers to one decimal position.



- 3) Using the figure above, solve  $g(g(x)) = 4$ . Round answers to one decimal position.

4) Find possible formulas for  $u(x)$  and  $v(x)$  knowing that  $h(x) = u(v(x))$  and  $h(x) = \sqrt{\frac{2 + \sin^2 x}{\sin^4 x + 9}}$

- 5) a) Find  $u(x)$  knowing that  $h(x) = u(v(x)) = 3e^{\cos^2 x}$  and  $v(x) = -\cos^2 x$ .  
b) Find  $v(x)$  knowing that  $h(x) = u(v(x)) = 5e^{\sin^2 x}$  and  $u(x) = e^x$ .

6) Find the inverse function of  $f(x) = 3 \ln \left( 5 + \frac{3}{x} \right)$ .

7) Find the inverse of  $f(x) = \frac{2 - 3 \ln x}{4 + 5 \ln x}$ .

8 + 9) Let  $A = f(t) = 54(0.85)^{\frac{t}{5}}$  be the number of grams of a radioactive substance remaining  $t$  years after the year 2010.

(a) What is the of A in the year 2010? Include units. **(Question continues on next page)**

- (b) What % does Q decreases every year?
- (c) What % does Q decreases every 5 years?
- (d) Evaluate  $f(20)$
- (e) What is the meaning of  $f(20)$  in the context of the problem? Include units.
- (f) Find a formula for  $f^{-1}(A)$  in terms of A.
- (g) Evaluate  $f^{-1}(20)$ .
- (h) What is the meaning of  $f^{-1}(20)$  in the context of the problem? Include units.

**Read Lessons 9.1 and 9.2 from book and from posted class notes.**