2-1 Notes Composite Functions   Name _____
Pre-Calculus

I. Composite Functions – plugging one function into another

$$(f \circ g)(x) = f(g(x))$$

* work from the inside out *

A. Given $f(x) = 2x^2 - 3$ and $g(x) = 4x$, find:

   1. $(f \circ g)(1) =$ 2. $(g \circ f)(2) =$

   3. $(f \circ f)(-2) =$ 4. $(g \circ g)(-1) =$

B. Graph $(f \circ g)(x)$
   In your calculator...
      type $f(x)$ in f1
      type $g(x)$ in f2
      type $f1(f2(x))$ in f3 → this is your $(f \circ g)(x)$

C. Given $f(x) = x^2 + 3x - 1$ and $g(x) = 2x + 3$, find :

   5. $(f \circ g)(x) =$ 6. $(g \circ f)(x) =$ 7. $(g \circ g)(x) =$

D. Given $f(x) = \sqrt{x - 2}$ and $g(x) = 1 - 2x$, find:

   8. $(f \circ g)(x) =$ 9. $(g \circ f)(x) =$ 10. $(g \circ g)(x) =$

E. Given $f(x) = x^2 + 4$ and $g(x) = \sqrt{x - 4}$, find:

   11. $(f \circ g)(x) =$ 12. $(g \circ f)(x) =$ 13. $(g \circ g)(x) =$

F. Given $f(x) = x^2 + 3x - 1$ and $g(x) = 2x + 3$, find:

   14. $(f \circ g)(x) =$ 15. $(g \circ f)(x) =$

G. Given $f(x) = \frac{1}{x+2}$ and $g(x) = \frac{4}{x-1}$, find:

   16. $(f \circ g)(x) =$ 17. $(f \circ f)(x) =$

H. Find the functions f and g such that $f \circ g = H$

   18. If $H(x) = (x^2 + 1)^{50}$ 19. If $H(x) = \frac{1}{x+1}$

I. If $f(x) = 3x - 4$ and $g(x) = 1/3 (x + 4)$, show that $(f \circ g)(x) = (g \circ f)(x) = x$.