

Math 115E Activity 6

Chapter 3 Section 3
Algebra of Functions

HOMEWORK WORTH 3 POINTS DUE SEP 23RD

Algebraic Rules (better table)		
$ax + bx = (a + b)x$	$a(bx) = abx$	$a(b + c) = ab + ac$
$x^a \cdot x^b = x^{a+b}$	$(x^a)^b = x^{ab}$	$(xy)^a = x^a y^a$
$x^{-a} = \frac{1}{x^a}$	$\frac{x^a}{x^b} = x^{a-b}$	$\left(\frac{x}{y}\right)^a = \frac{x^a}{y^a}$
$(x + y)^2 \longrightarrow (x + y)(x + y) \longrightarrow x(x + y) + y(x + y) \longrightarrow x^2 + xy + xy + y^2 \longrightarrow x^2 + 2xy + y^2$		

Section 1:

Given the following functions $f(x) = x^2 + x$, $g(x) = 2 - 4x$, $h(x) = x^2 - 1$, $p(x) = x + 6$, $k(x) = 2x + 2$

1. Find $f(g(2))$

5. Find $f(g(x))$

2. Find $g(f(2))$

6. Find $g(f(x))$

3. Find $h(k(-4))$

7. Find $h(k(x))$

8. Find $k(h(-4))$

12. Find $k(h(x))$

9. Find $p(f(2))$

13. Find $p(f(x))$

10. Find $f(p(1))$

14. Find $f(p(x))$

Section 2:

Given the following functions $f(x) = x^2 + x$, $g(x) = 2 - 4x$, $h(x) = x^2 - 1$, $p(x) = x + 6$, $k(x) = 2x + 2$

15. Find $f(x) \cdot g(x)$

19. Find $g(x) \cdot f(x)$

16. Find $g(-x) + h(x^2)$

20. Find $p(x) + g(2x)$

17. Find $k(x) \cdot k(x)$

21. Find $h(x) \cdot p(x)$

Section 3:

23. Find $f(x)(g(x) + k(x))$

26. Find $f(k(x)) + p(h(x))$

24. Find $g(x)(f(x) + k(x))$

27. Find $f(f(x)) - k(k(x))$

25. Find $k(x)(f(x) + g(x))$

28. Find $h(x)f(x) + p(x)k(x)$