Function Homework

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Exercises for Section 17.1

1.

2.

3.

4.

5.

Exercises for Section 17.2

1.

2.

5

6

7

9

15

16

17

1.

2.

3.

4.

5.

6.

7.

Exercises for Section 17.4

1. (5,1), (6,1), (8,1)

3 $g \circ f = (1,1), (2,1), (3,3)$
$f \circ g = (1,1), (2,2), (3,2)$

5 $\mathrm{g(f(x))} = x + 1$
$\mathrm{f(g(x))} = \sqrt[3]{x^3 + 1}$

6 $\mathrm{g(f(x))} = 3(\frac{1}{x^2+1}) + 1$
$\mathrm{f(g(x))} = \frac{1}{(3x+2)^2+1}$

7 $g \circ f = (mn + 1, mn + m^2)$
$f \circ g = ((m + 1)(m + n), (m + 1)^2)$

8 $g \circ f = (5(3m - 4n) + 2m + n, 3m - 4n)$
$f \circ g = (3(5m + n) - 4m, 2(5m + n) + m)$

9 $g \circ f = (m + n, m + n)$
$f \circ g = m + m = 2m$

i

$$f \circ g \circ h = f(g(h(x)))$$
$$= (\frac{1}{(x^4)^2+1})^3 - 4(\frac{1}{(x^4)^2+1})$$

ii

$$f \circ h \circ g = f(h(g(x)))$$
$$= ((\frac{1}{x^2+1})^4)^3 - 4((\frac{1}{x^2+1})^4)$$

iii

$$h \circ g \circ f = h(g(f(x)))$$
$$(\frac{1}{(x^3-4x)^2+1})^4$$

Exercises for Section 17.5

1.

2.

3.

5