Name: _____

Combinations and Composition of Functions

Exercise 1: Find $(f+g)_{(x)}, (f-g)_{(x)}, (f \bullet g)_{(x)}$ and $\left(\frac{f}{g}\right)_{(x)}$. Specify the domain and the range of each result.

1) $f(x)=2-3x$, $g(x)=4x-1$

2) $f(x)=x-2, g(x)=x+5$

3) $f(x)=x-2, g(x)=5$

4) $f(x)=x^2+x, g(x)=x^2+1$

5) $f(x)=x^3+4, g(x)=x^3-11$

6) $f(x)=x^3+x^2+2, g(x)=x^3+3x^2-9$

7) $f(x)=\sqrt{x^2+3}, g(x)=\frac{x-1}{x+1}$

8) $f(x)=\frac{x}{x+1}, g(x)=\frac{2x}{x-3}$

9) $f(x)=\frac{x+1}{x+3}, g(x)=\frac{2x-1}{x+5}$

10) $f(x)=\frac{4x}{x-2}, g(x)=\frac{x+1}{2x-9}$

Exercise 2: Evaluate the indicated function for $f(x)=2x-1$ and $g(x)=3-x^2$

1) $(f+g)_{(2)}$

2) $(f+g)_{(2x+3)}$

3) $(f-g)_{(4)}$

4) $(f-g)_{(a)}$

5) $(f \bullet g)_{(3)}$

6) $(f \bullet g)_{(-1)}$

7) $4\left(\frac{f}{g}\right)_{(-2)}+3(f \bullet g)_{(7)}$

8) $2f_{(5)}+g_{(3)}$