**2CP HW Practice: Operations of Functions**

L**et *f*(*x*) = 2*x* + 1 and *g*(*x*) = *x* – 3. State the domain if there are any restrictions.**

 **1.** Find (*f* + *g*)(*x*). **2.** Find (*f* – *g*)(*x*).

 **3.** Find (*f* ⋅*g*)(*x*). **4.** Find $\left(\frac{f}{g}\right)$(*x*).

**Let *f*(*x*) = 8**$x^{2}$ **and *g*(*x*) =** $\frac{1}{x^{2}}$**. State the domain if there are any restrictions.**

 **5.** Find (*f* + *g*)(*x*). **6.** Find (*f* – *g*)(*x*).

 **7.** Find (*f* ⋅*g*)(*x*). **8.** Find $\left(\frac{f}{g}\right)$(*x*).

**Let *f*(*x*) =** $x^{2}$ **+ 7*x* + 12 and *g*(*x*) =** $x^{2}$ **– 9. State the domain if there are any restrictions.**

 **9.** Find (*f* + *g*)(*x*). **10.** Find (2*f* – 3*g*)(*x*).

**11.** Find (*f* ⋅*g*)(*x*). **12.** Find $\left(\frac{f}{g}\right)$(*-2*).

**13. Use the table to state the domain of f(x) and g(x). Then find the following:**

|  |  |  |
| --- | --- | --- |
| x | f(x) | g(x) |
| -2 | 5 | -21 |
| -1 | 6 | -14 |
| 0 | 7 | -7 |
| 1 | 8 | 0 |
| 2 | 9 | 7 |

1. $\left(f+g\right)\left(1\right)$
2. $\left(\frac{f}{g}\right)(0)$
3. $\left(\frac{f}{g}\right)(1)$
4. $f\left(-2\right)-g(2)$
5. $(2g+f)(-1)$

**14. Use the graph to state the domain of f(x) and g(x). Then find the following (estimate where necessary):**



1. $\left(f+g\right)\left(1\right)$ c.$ f\left(4\right)-g(2)$
2. $\left(fg\right)\left(1\right)$ d.$ (2g+f)(3)$

**15. BUSINESS** The function *f*(*x*) = 1000 – 0.01$x^{2}$ models the manufacturing cost per item when *x* items are produced, and *g*(*x*) = 150 – 0.001$x^{2}$ models the service cost per item. Write a function *C*(*x*) for the total manufacturing and service cost per item.

**16. PROFIT** The function *f*(*x*) = 4$x^{2}$ + 2*x* represents the revenue a company earns *x* years after 2000, and *g*(*x*) = 10*x* + 125 represents the cost per year. Write a function *P*(*x*) for the profit the company earns per year. (Hint: Profit is the difference of revenue and cost.)