

Name: \_\_\_\_\_

Student #: \_\_\_\_\_

Date: \_\_\_\_\_

T.A. #: \_\_\_\_\_

**Mathematics 12 Pre-Calculus**  
**LEARNING GUIDE 17 TEST – FUNCTION OPERATIONS**

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**\*Full marks will NOT be given for the final answer only.**

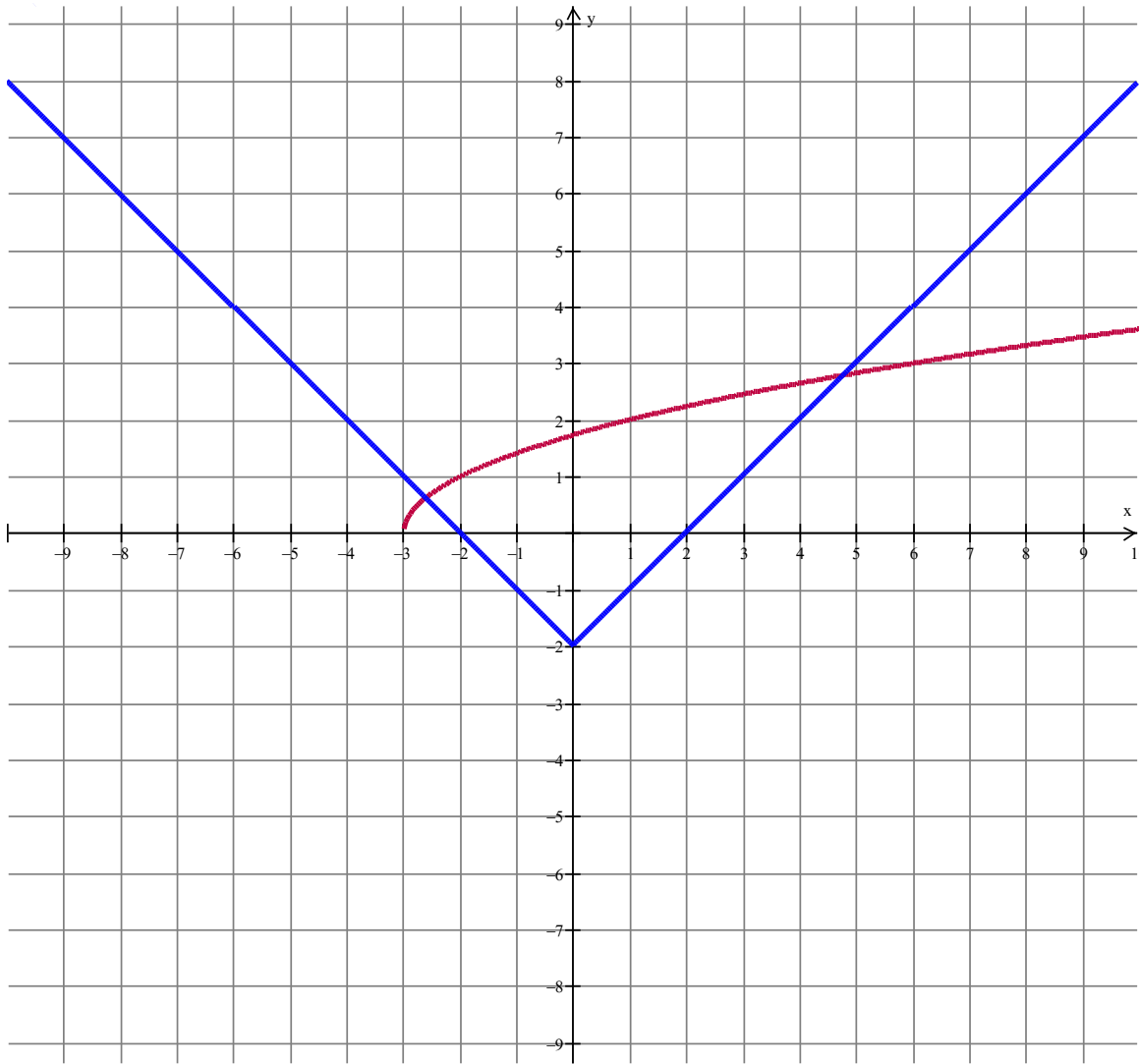
When using a calculator, you should provide a decimal answer that is correct **to at least two decimal places** (unless otherwise indicated). Such rounding should occur **only** in the final step of the solution.

1. If  $f(x) = -3x + 1$  and  $g(x) = 2x^2$ , determine  $h(x) = f(x) - g(x)$  and find  $h(-2)$ . (2 marks)

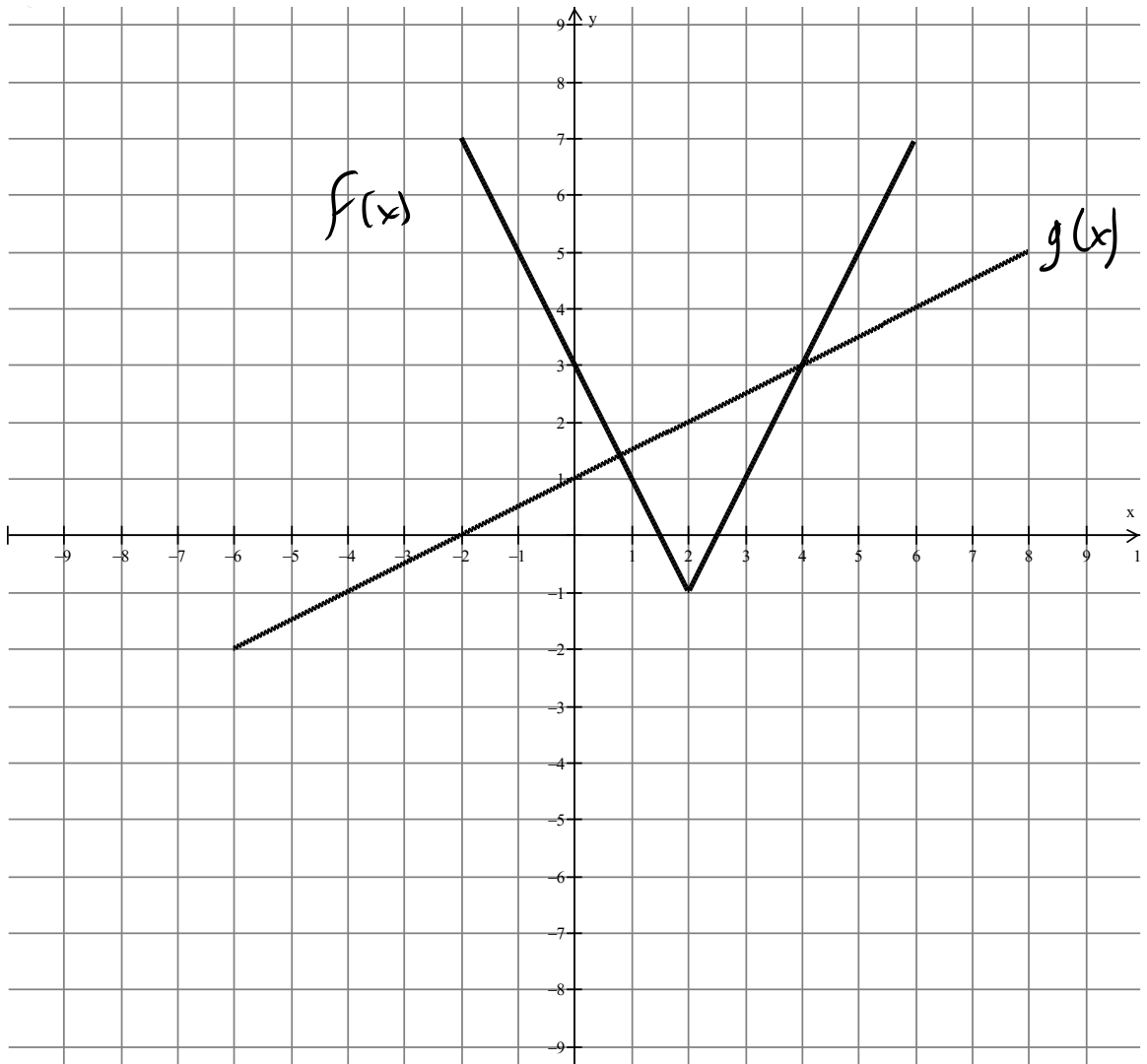
2. If  $f(x) = 2x - 3$  and  $g(x) = x + 1$  determine the function  $h(x) = (f \cdot g)(x)$  and determine the range of  $h(x)$ . (2 marks)

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3. Given the graphs of  $y = f(x)$  and  $y = g(x)$ , sketch the graph of  $y = f(x) + g(x)$ .  
(2 marks)



4. Given the functions  $y = f(x)$  and  $y = g(x)$ , determine  $\left(\frac{f}{g}\right)(2)$  and determine the domain and range of the function  $\left(\frac{f}{g}\right)(x)$ . (3 marks)



5. If  $f(x) = 2x - 5$  and  $g(x) = 3 - 7x$ , determine: (1 mark each)

a)  $f(g(x))$

b)  $g(f(1))$

c)  $g(g(x))$

6. The revenue function for a school group selling  $n$  bookmarks is given by  $R(n) = 2n$ , and the total cost function is given by  $C(n) = 144 + 0.80n$ . Determine the number of bookmarks that need to be sold for the school group to break even. (2 marks)

7. A clothing store is having a massive sale. All items are 30% off.

a) Write the function,  $s(p)$ , that relates the regular price,  $p$ , to the sale price,  $s$ .  
(1 mark)

b) If tax is 12%, write the function,  $t(s)$ , that relates the sale price,  $s$ , to the total cost including taxes,  $t$ .  
(1 mark)

c) Write a composite function,  $t(p)$ , that expresses the total cost,  $t$ , in terms of the regular price,  $p$ .  
(1 mark)

d) What would be the total cost of a sweater with a regular price of \$59.99? (1 mark)