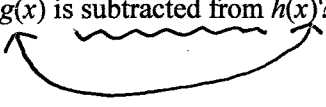


ANSWER KEY

COMMON CORE ALGEBRA II HOMEWORK #1-1 OPERATIONS WITH FUNCTIONS

1. If $g(x) = \frac{7}{8}x^2 - \frac{3}{4}x$ and $h(x) = \frac{5}{8}x^2 - \frac{1}{4}x + 2$, what is the difference when $g(x)$ is subtracted from $h(x)$? 

(1) $-\frac{1}{4}x^2 - x + 2$

(3) $-\frac{1}{4}x^2 + \frac{1}{2}x + 2$

(2) $\frac{1}{4}x^2 - x + 2$

(4) $\frac{1}{4}x^2 - \frac{1}{2}x - 2$

$$\begin{aligned} & h(x) - g(x) \\ &= \frac{5}{8}x^2 - \frac{1}{4}x + 2 - \left(\frac{7}{8}x^2 - \frac{3}{4}x \right) \\ &= \frac{5}{8}x^2 - \frac{1}{4}x + 2 - \frac{7}{8}x^2 + \frac{3}{4}x \\ &= -\frac{2}{8}x^2 + \frac{2}{4}x + 2 = -\frac{1}{4}x^2 + \frac{1}{2}x + 2 \end{aligned}$$

2. If $f(x) = \frac{x}{4} - \frac{1}{3}$ and $g(x) = \frac{x}{4} + \frac{1}{3}$, what is the product of $f(x)$ and $g(x)$?

(1) $\frac{x^2}{8} - \frac{1}{9}$

(3) $\frac{x^2}{8} - \frac{x}{6} - \frac{1}{9}$

(2) $\frac{x^2}{16} - \frac{1}{9}$

(4) $\frac{x^2}{16} - \frac{x}{6} - \frac{1}{9}$

$$\begin{aligned} & f(x) \cdot g(x) \\ &= \left(\frac{x}{4} - \frac{1}{3} \right) \left(\frac{x}{4} + \frac{1}{3} \right) \\ &= \frac{x^2}{16} + \frac{x}{12} - \frac{x}{12} - \frac{1}{9} \\ &= \frac{x^2}{16} - \frac{1}{9} \end{aligned}$$

3. $f(x) = 3x^2 - 4x + 1$ and $g(x) = x + 1$

Express $2f(x) - [g(x)]^2$ as a polynomial in standard form.

*** COMMON error**

$$\begin{aligned} 2(3x^2 - 4x + 1) - (x+1)^2 \\ 6x^2 - 8x + 2 - (x+1)(x+1) \\ 6x^2 - 8x + 2 - x^2 + 2x + 1 \\ 5x^2 - 6x + 3 \end{aligned}$$

correct answer!

$$\begin{aligned} 2(3x^2 - 4x + 1) - (x+1)^2 \\ 6x^2 - 8x + 2 - (x+1)(x+1) \\ 6x^2 - 8x + 2 - (x^2 + 2x + 1) \\ 6x^2 - 8x + 2 - x^2 - 2x - 1 \end{aligned}$$

$$5x^2 - 10x - 1$$

4. A company produces x units of a product per month, where $C(x)$ represents the total cost and $R(x)$ represents the total revenue for the month. The functions are modeled by $C(x) = 300x + 250$ and $R(x) = -0.5x^2 + 800x - 100$. The profit is the difference between revenue and cost where $P(x) = R(x) - C(x)$. What is the total profit, $P(x)$, for the month?

(1) $P(x) = -0.5x^2 + 500x - 150$

(2) $P(x) = -0.5x^2 + 500x - 350$

(3) $P(x) = -0.5x^2 - 500x + 350$

(4) $P(x) = -0.5x^2 + 500x + 350$

$$-0.5x^2 + 800x - 100 - (300x + 250)$$

$$-0.5x^2 + 800x - 100 - 300x - 250$$

5. Express $(\frac{1}{4}x + 3)^2$ as a trinomial.

$$(\frac{1}{4}x + 3)(\frac{1}{4}x + 3)$$

$$\frac{1}{16}x^2 + \frac{3}{4}x + \frac{3}{4}x + 9$$

$$\frac{1}{16}x^2 + \frac{6}{4}x + 9$$