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

$h(x)-g(x)$

$=\frac{5}{8}x^2-\frac{1}{4}x+2-\left(\frac{7}{8}x^2-\frac{3}{4}x\right)$

$=\frac{5}{8}x^2-\frac{1}{4}x+2-\frac{7}{8}x^2+\frac{3}{4}x$

$=-\frac{2}{8}x^2+\frac{2}{4}x+2=-\frac{1}{4}x^2+\frac{1}{2}x+2$

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

$f(x)\cdot g(x)$

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

$\frac{x^2}{16}+\frac{x}{12}-\frac{x}{12}-\frac{1}{9}$

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

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

$2(3x^2 - 4x + 1) - (x+1)^2$
$6x^2 - 8x + 2 - (x+1)(x+1)$
$6x^2 - 8x + 2 - x^2 + 2x + 1$
$5x^2 - 6x + 3$

correct answer!

$2(3x^2 - 4x + 1) - (x+1)^2$
$6x^2 - 8x + 2 - (x+1)(x+1)$
$6x^2 - 8x + 2 - (x^2 + 2x + 1)$
$6x^2 - 8x + 2 - x^2 - 2x - 1$
$5x^2 - 10x - 1$

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

$-.5x^2 + 800x - 100 - (300x + 250)$
$-.5x^2 + 800x - 100 - 300x - 250$

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

$(\frac{1}{4}x + 3)(\frac{1}{4}x + 3)$
$\frac{1}{16}x^2 + \frac{3}{4}x + \frac{3}{4}x + 9$
$\frac{1}{16}x^2 + \frac{6}{4}x + 9$