

AM Objective #10: Add, Subtract, Multiply and Divide Fractions

1. Find $(f - g)(x)$ and $(f + g)(4)$ for $f(x) = 4x^2 - 5x + 2$ and $g(x) = 4 + 2x + 2x^2$.

[A] $(f - g)(x) = 2x^2 - 7x - 2$, $(f + g)(4) = 90$

[B] $(f - g)(x) = 2x^2 - 7x - 2$, $(f + g)(4) = 38$

[C] $(f - g)(x) = 8x^2 - 3x + 4$, $(f + g)(4) = 120$

[D] $(f - g)(x) = 8x^2 - 3x + 4$, $(f + g)(4) = 84$

$$\begin{array}{r} f(x) \quad 4x^2 - 5x + 2 \\ - g(x) - (2x^2 + 2x + 4) \\ \hline (f - g)(x) = 2x^2 - 7x - 2 \end{array}$$

$$\begin{array}{r} f(x) = 4x^2 - 5x + 2 \\ + g(x) = 2x^2 + 2x + 4 \\ \hline (f+g)(x) = 6x^2 - 3x + 6 \end{array}$$

$$\begin{aligned} (f+g)(4) &= 6(4)^2 - 3(4) + 6 \\ &= 6 \cdot 16 - 12 + 6 \\ &= 96 - 12 + 6 \\ &= 84 + 6 \\ &= 90 \end{aligned}$$

2. Given $f(x) = 1 - x^2$ and $(f - g)(x) = -x^2 + x$, find the function g .

[A] $g(x) = x$ [B] $g(x) = -x + 1$ [C] $g(x) = -x^2 - x + 2$ [D] none of these

$$\begin{array}{r} f(x) \quad -x^2 \quad x \quad \# \\ - g(x) - (0x^2 - x + 1) \\ \hline (f - g)(x) -x^2 + x + 0 \end{array}$$

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

[A] $x^3 - x^2 - x + 1$

[B] $-x^2 + x$

[C] $-x^2 - x + 2$

[D] $1 + x$

$$\begin{array}{r}
 \begin{array}{c} x^2 \\[-1ex] x \\ \hline \end{array} & \begin{array}{c} \# \\[-1ex] \# \\ \hline \end{array} \\
 f(x) & -x^2 + 0x + 1 \\
 + g(x) & \quad \quad \quad -x + 1 \\
 \hline
 (f+g)(x) = -x^2 - x + 2
 \end{array}$$

4. Given $f(x) = 4 - x^2$ and $(f - g)(x) = -x^2 + x + 2$, find the function g .

$$\begin{array}{r}
 \begin{array}{c} x^2 \\[-1ex] x \\ \hline \end{array} & \begin{array}{c} \# \\[-1ex] 4 \\ \hline \end{array} \\
 f(x) & -x^2 \\
 -g(x) & -(0x^2 - x + 2) \\
 \hline
 (f-g)(x) & -x^2 + x + 2
 \end{array}$$

$g(x) = -x + 2$