Composite Functions

Formative Test Chapter 5: Functions and Graphs **SM015**

1. Suppose that $f(x) = -2x^2 + 5$, which of the following shows the expression for $f[f(x)]$?

   A. $f[f(x)] = 4x^4 - 20x^3 - 25$

   B. $f[f(x)] = 4x^4 - 20x^3 - 25$

   C. $f[f(x)] = -8x^4 - 40x^2 - 50$

   D. $f[f(x)] = -8x^4 + 40x^2 - 50$

2. Suppose that $f(x) = \frac{1}{x-1}$, $g(x) = \frac{\sqrt{x}}{x}$, and $h(x) = x^2$, which of the following shows the expression for $f[f(x)]$?

   A. $f[g[h(x)]] = \frac{x}{1-x}$

   B. $f[g[h(x)]] = \frac{1}{1-x}$

   C. $f[g[h(x)]] = \frac{1}{x} - 1$

   D. $f[g[h(x)]] = \frac{1}{x} + 1$

3. Which of the following shows the composite function when the inner function is a square root function, $y = \sqrt{3x-2}$ and the outer function is given by $y = 2x^2 - 1$?

   A. $3x - 3$

   B. $6x - 5$

   C. $3x + 3$

   D. $6x + 5$

4. Suppose that $f(x) = 4x^2 - 1$ and $g(x) = 1 - x$, which of the following shows the expression for $f[g(x)]$?

   A. $2 - 4x^2$

   B. $4x^2 - 2$

   C. $4x^2 - 8x - 3$

   D. $4x^2 - 8x + 3$

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5. Suppose that $f(x) = \frac{1}{x}$ and $g(x) = (x-1)(x+3)$, which of the following shows the expression for $g[f(x)]$?

A. $\frac{2}{x^2} + \frac{1}{x} + 3$

B. $\frac{1}{x^2} + \frac{1}{x} - 3$

C. $\frac{1}{x^2} + \frac{2}{x} - 3$

D. $\frac{1}{x^2} + \frac{2}{x} + 3$

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