Simplifying Function Notation

1. Suppose f is a function where $f(x) = 2x + 3$. Simplify the formula for...

   a) $f(5x)$ b) $f(-x)$ c) $f(x+7)$

2. Suppose g is a function where $g(x) = x^2 - 6$. Simplify the formula for...

   a) $g(5x)$ b) $g(-x)$ c) $g(x+7)$

3. Suppose h is a function where $h(x) = x^2 + 2x - 7$. Simplify the formula for...

   a) $h(5x)$ b) $h(-x)$ c) $h(x+7)$

4. Suppose k is a function where $k(x) = \dfrac{2x+3}{x+9}$. Simplify the formula for...

   a) $k(5x)$ b) $k(-x)$ c) $k(x+7)$

5. Let f be the function with formula $f(x) = x^3 - 6x^2 + 11x - 6$.

   a) Use graphing technology to plot a graph of f.

   b) Simplify the formula for $f(2x)$.

   c) Use graphing technology to plot a graph of $y = f(2x)$, using your formula from the previous part.

   d) Do you notice anything about how the two graphs relate to each other?

6. Let g be the function with formula $g(x) = \dfrac{1}{x^2+1}$.

   a) Use graphing technology to plot a graph of g.

   b) Simplify the formula for $g(x+2)$.

   c) Use graphing technology to plot a graph of $y = g(x+2)$, using your formula from the previous part.

   d) Do you notice anything about how the two graphs relate to each other?