5. Which of the following are correct calculations for difference quotient of:
$$g(y) = 7y^2 + 9y + 6$$

$g(y) = 7y^2 + 9y + 6$

$g(y+h) = 7(h+y)^2 + 9(h+y) + 6$

$= 7h^2 + 14hy + 9h + 7y^2 + 9y + 6$

$\dfrac{g(y+h) - g(y)}{h} = \dfrac{\left(7h^2 + 14yh + 9h + 7y^2 + 9y + 6\right) - \left(7(y+1)^2 + 9(y+1) + 6\right)}{h}$

$= \dfrac{7h^2 + 14yh + 9h}{h}$

$= \dfrac{h(7h + 14y + 9)}{h}$

$= 7h + 14y + 9$

$g(y) = 7y^2 + 9y + 6$

$g(y+h) = 7(h+y)^2 + 9(h+y) + 6$

$= 7h^2 + 14hy + 23h + 7y^2 + 23y + 22$

$\dfrac{g(y+h) - g(y)}{h} = \dfrac{\left(7h^2 + 14yh + 23h + 7y^2 + 23y + 22\right) - \left(7y^2 + 9y + 6\right)}{h}$

$= \dfrac{7h^2 + 14yh + 9h}{h}$

$= \dfrac{h(7h + 14y + 9)}{h}$

$= 7h + 14y + 9$

$g(y) = 7y^2 + 9y + 6$

$g(y+h) = 7(h+y)^2 + 9(h+y) + 6$

$= 7h^2 + 14hy + 9h + 7y^2 + 9y + 6$

$\dfrac{g(y+h) - g(y)}{h} = \dfrac{\left(7h^2 + 14yh + 9h + 7y^2 + 9y + 6\right) - \left(7y^2 + 9y + 6\right)}{h}$

$= \dfrac{7h^2 + 14yh + 9h}{h}$

$= \dfrac{h(7h + 14y + 9)}{h}$

$= 7h + 14y + 9$

$g(y) = 7y^2 + 9y + 6$

$g(y+h) = 7(h+y)^2 + 9(h+y) + 6$

$= 7h^2 + 14hy - 5h + 7y^2 - 5y + 4$

$\dfrac{g(y+h) - g(y)}{h} = \dfrac{\left(7h^2 + 14yh + 37h + 7y^2 + 37y + 52\right) - \left(7y^2 + 9y + 6\right)}{h}$

$= \dfrac{7h^2 + 14yh + 9h}{h}$

$= \dfrac{h(7h + 14(y+1) + 9)}{h}$

$= 7h + 14y + 9$

Solution