6. Which of the following are correct calculations for difference quotient of:

$$g(p) = 3p^2 + 4p + 8$$

$$g(p) = 3p^2 + 4p + 8$$

$$g(p+h) = 3(h+p)^2 + 4(h+p) + 8$$

$$= 3h^2 + 6hp + 4h + 3p^2 + 4p + 8$$

$$\frac{g(p+h) - g(p)}{h} = \frac{\left(3h^2 + 6ph + 4h + 3p^2 + 4p + 8\right) - \left(3(p+1)^2 + 4(p+1) + 8\right)}{h}$$

$$= \frac{3h^2 + 6ph + 4h}{h}$$

$$= \frac{h(3h + 6p + 4)}{h}$$

$$= 3h + 6p + 4$$

$$g(p) = 3p^2 + 4p + 8$$

$$g(p+h) = 3(h+p)^2 + 4(h+p) + 8$$

$$= 3h^2 + 6hp + 10h + 3p^2 + 10p + 15$$

$$\frac{g(p+h) - g(p)}{h} = \frac{\left(3h^2 + 6ph + 10h + 3p^2 + 10p + 15\right) - \left(3p^2 + 4p + 8\right)}{h}$$

$$= \frac{3h^2 + 6ph + 4h}{h}$$

$$= \frac{h(3h + 6p + 4)}{h}$$

$$= 3h + 6p + 4$$

$$g(p) = 3p^2 + 4p + 8$$

$$g(p+h) = 3(h+p)^2 + 4(h+p) + 8$$

$$= 3h^2 + 6hp + 4h + 3p^2 + 4p + 8$$

$$\frac{g(p+h) - g(p)}{h} = \frac{\left(3h^2 + 6ph + 4h + 3p^2 + 4p + 8\right) - \left(3p^2 + 4p + 8\right)}{h}$$

$$= \frac{3h^2 + 6ph + 4h}{h}$$

$$= \frac{h(3h + 6p + 4)}{h}$$

$$= 3h + 6p + 4$$

$$g(p) = 3p^2 + 4p + 8$$

$$g(p+h) = 3(h+p)^2 + 4(h+p) + 8$$

$$= 3h^2 + 6hp - 2h + 3p^2 - 2p + 7$$

$$\frac{g(p+h) - g(p)}{h} = \frac{\left(3h^2 + 6ph + 16h + 3p^2 + 16p + 28\right) - \left(3p^2 + 4p + 8\right)}{h}$$

$$= \frac{3h^2 + 6ph + 4h}{h}$$

$$= \frac{h(3h + 6(p+1) + 4)}{h}$$

$$= 3h + 6p + 4$$

Solution