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

$$w(j) = 2j^2 + 3j + 9$$

$$w(j) = 2j^2 + 3j + 9$$

$$w(j+h) = 2(h+j)^2 + 3(h+j) + 9$$

$$= 2h^2 + 4hj + 3h + 2j^2 + 3j + 9$$

$$\frac{w(j+h) - w(j)}{h} = \frac{\left(2h^2 + 4jh + 3h + 2j^2 + 3j + 9\right) - \left(2(j+1)^2 + 3(j+1) + 9\right)}{h}$$

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

$$= \frac{h(2h + 4j + 3)}{h}$$

$$= 2h + 4j + 3$$

$$w(j) = 2j^2 + 3j + 9$$

$$w(j+h) = 2(h+j)^2 + 3(h+j) + 9$$

$$= 2h^2 + 4hj + 7h + 2j^2 + 7j + 14$$

$$\frac{w(j+h) - w(j)}{h} = \frac{\left(2h^2 + 4jh + 7h + 2j^2 + 7j + 14\right) - \left(2j^2 + 3j + 9\right)}{h}$$

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

$$= \frac{h(2h + 4j + 3)}{h}$$

$$= 2h + 4j + 3$$

$$w(j) = 2j^2 + 3j + 9$$

$$w(j+h) = 2(h+j)^2 + 3(h+j) + 9$$

$$= 2h^2 + 4hj + 3h + 2j^2 + 3j + 9$$

$$\frac{w(j+h) - w(j)}{h} = \frac{\left(2h^2 + 4jh + 3h + 2j^2 + 3j + 9\right) - \left(2j^2 + 3j + 9\right)}{h}$$

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

$$= \frac{h(2h + 4j + 3)}{h}$$

$$= 2h + 4j + 3$$

$$w(j) = 2j^2 + 3j + 9$$

$$w(j+h) = 2(h+j)^2 + 3(h+j) + 9$$

$$= 2h^2 + 4hj - h + 2j^2 - j + 8$$

$$\frac{w(j+h) - w(j)}{h} = \frac{\left(2h^2 + 4jh + 11h + 2j^2 + 11j + 23\right) - \left(2j^2 + 3j + 9\right)}{h}$$

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

$$= \frac{h(2h + 4(j+1) + 3)}{h}$$

$$= 2h + 4j + 3$$

Solution