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

$$k(j) = 2j^2 + 6j + 7$$

$$k(j) = 2j^2 + 6j + 7$$
$$k(j+h) = 2(h+j)^2 + 6(h+j) + 7$$
$$= 2h^2 + 4hj + 6h + 2j^2 + 6j + 7$$
$$\frac{k(j+h) - k(j)}{h} = \frac{\left(2h^2 + 4jh + 6h + 2j^2 + 6j + 7\right) - \left(2(j+1)^2 + 6(j+1) + 7\right)}{h}$$
$$= \frac{2h^2 + 4jh + 6h}{h}$$
$$= \frac{h(2h + 4j + 6)}{h}$$
$$= 2h + 4j + 6$$

$$k(j) = 2j^2 + 6j + 7$$
$$k(j+h) = 2(h+j)^2 + 6(h+j) + 7$$
$$= 2h^2 + 4hj + 10h + 2j^2 + 10j + 15$$
$$\frac{k(j+h) - k(j)}{h} = \frac{\left(2h^2 + 4jh + 10h + 2j^2 + 10j + 15\right) - \left(2j^2 + 6j + 7\right)}{h}$$
$$= \frac{2h^2 + 4jh + 6h}{h}$$
$$= \frac{h(2h + 4j + 6)}{h}$$
$$= 2h + 4j + 6$$

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$$k(j+h) = 2(h+j)^2 + 6(h+j) + 7$$
$$= 2h^2 + 4hj + 6h + 2j^2 + 6j + 7$$
$$\frac{k(j+h) - k(j)}{h} = \frac{\left(2h^2 + 4jh + 6h + 2j^2 + 6j + 7\right) - \left(2j^2 + 6j + 7\right)}{h}$$
$$= \frac{2h^2 + 4jh + 6h}{h}$$
$$= \frac{h(2h + 4j + 6)}{h}$$
$$= 2h + 4j + 6$$

$$k(j) = 2j^2 + 6j + 7$$
$$k(j+h) = 2(h+j)^2 + 6(h+j) + 7$$
$$= 2h^2 + 4hj + 2h + 2j^2 + 2j + 3$$
$$\frac{k(j+h) - k(j)}{h} = \frac{\left(2h^2 + 4jh + 14h + 2j^2 + 14j + 27\right) - \left(2j^2 + 6j + 7\right)}{h}$$
$$= \frac{2h^2 + 4jh + 6h}{h}$$
$$= \frac{h(2h + 4(j+1) + 6)}{h}$$
$$= 2h + 4j + 6$$

Solution