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

$$k(n) = n^2 + 3n + 7$$

$$k(n) = n^2 + 3n + 7$$

$$k(n+h) = (h+n)^2 + 3(h+n) + 7$$

$$= h^2 + 2hn + 3h + n^2 + 3n + 7$$

$$\frac{k(n+h) - k(n)}{h} = \frac{\left(h^2 + 2nh + 3h + n^2 + 3n + 7\right) - \left((n+1)^2 + 3(n+1) + 7\right)}{h}$$

$$= \frac{h^2 + 2nh + 3h}{h}$$

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

$$= h + 2n + 3$$

$$k(n) = n^2 + 3n + 7$$

$$k(n+h) = (h+n)^2 + 3(h+n) + 7$$

$$= h^2 + 2hn + 5h + n^2 + 5n + 11$$

$$\frac{k(n+h) - k(n)}{h} = \frac{\left(h^2 + 2nh + 5h + n^2 + 5n + 11\right) - \left(n^2 + 3n + 7\right)}{h}$$

$$= \frac{h^2 + 2nh + 3h}{h}$$

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

$$= h + 2n + 3$$

$$k(n) = n^2 + 3n + 7$$

$$k(n+h) = (h+n)^2 + 3(h+n) + 7$$

$$= h^2 + 2hn + 3h + n^2 + 3n + 7$$

$$\frac{k(n+h) - k(n)}{h} = \frac{\left(h^2 + 2nh + 3h + n^2 + 3n + 7\right) - \left(n^2 + 3n + 7\right)}{h}$$

$$= \frac{h^2 + 2nh + 3h}{h}$$

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

$$= h + 2n + 3$$

$$k(n) = n^2 + 3n + 7$$

$$k(n+h) = (h+n)^2 + 3(h+n) + 7$$

$$= h^2 + 2hn + h + n^2 + n + 5$$

$$\frac{k(n+h) - k(n)}{h} = \frac{\left(h^2 + 2nh + 7h + n^2 + 7n + 17\right) - \left(n^2 + 3n + 7\right)}{h}$$

$$= \frac{h^2 + 2nh + 3h}{h}$$

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

$$= h + 2n + 3$$

Solution