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

$d(k) = k^2 + 6k + 3$

$d(k) = k^2 + 6k + 3$

$d(k+h) = (h + k)^2 + 6(h + k) + 3$

$= h^2 + 2hk + 6h + k^2 + 6k + 3$

$\dfrac{d(k+h) - d(k)}{h} = \dfrac{\left(h^2 + 2kh + 6h + k^2 + 6k + 3\right) - \left((k+1)^2 + 6(k+1) + 3\right)}{h}$

$= \dfrac{h^2 + 2kh + 6h}{h}$

$= \dfrac{h(h + 2k + 6)}{h}$

$= h + 2k + 6$

$d(k) = k^2 + 6k + 3$

$d(k+h) = (h + k)^2 + 6(h + k) + 3$

$= h^2 + 2hk + 8h + k^2 + 8k + 10$

$\dfrac{d(k+h) - d(k)}{h} = \dfrac{\left(h^2 + 2kh + 8h + k^2 + 8k + 10\right) - \left(k^2 + 6k + 3\right)}{h}$

$= \dfrac{h^2 + 2kh + 6h}{h}$

$= \dfrac{h(h + 2k + 6)}{h}$

$= h + 2k + 6$

$d(k) = k^2 + 6k + 3$

$d(k+h) = (h + k)^2 + 6(h + k) + 3$

$= h^2 + 2hk + 6h + k^2 + 6k + 3$

$\dfrac{d(k+h) - d(k)}{h} = \dfrac{\left(h^2 + 2kh + 6h + k^2 + 6k + 3\right) - \left(k^2 + 6k + 3\right)}{h}$

$= \dfrac{h^2 + 2kh + 6h}{h}$

$= \dfrac{h(h + 2k + 6)}{h}$

$= h + 2k + 6$

$d(k) = k^2 + 6k + 3$

$d(k+h) = (h + k)^2 + 6(h + k) + 3$

$= h^2 + 2hk + 4h + k^2 + 4k - 2$

$\dfrac{d(k+h) - d(k)}{h} = \dfrac{\left(h^2 + 2kh + 10h + k^2 + 10k + 19\right) - \left(k^2 + 6k + 3\right)}{h}$

$= \dfrac{h^2 + 2kh + 6h}{h}$

$= \dfrac{h(h + 2(k+1) + 6)}{h}$

$= h + 2k + 6$

Solution