3. Which of the following are correct calculations for difference quotient of: $u\left(n\right)$ =6 n + 2

$$\begin{array}{l} u\,(\,n\,) = 6\,\,n\,+\,2 \\ u\,(\,n+h\,) = 6\,\,(\,h\,+\,n\,)\,\,+\,2 \\ = 6\,\,h\,+\,6\,\,n\,+\,2 \\ \frac{u\,(\,n+h\,)\,-\,u\,(\,n\,)}{h} = \frac{(\,6\,\,h+6\,\,n+2\,)\,-\,(\,6\,\,(\,n+1\,)\,+\,2\,)}{h} \\ = \frac{6\,\,h}{h} \\ = \frac{h\,(\,6\,)}{h} \\ = 6 \end{array}$$

$$\begin{array}{l} u\,(\,n\,) = 6\,\,n\,+\,2 \\ u\,(\,n\,+\,h\,) = 6\,\,(\,h\,+\,n\,)\,\,+\,2 \\ = 6\,\,h\,+\,6\,\,n\,+\,8 \\ \frac{u\,(\,n\,+\,h\,)\,-\,u\,(\,n\,)}{h} = \frac{(\,6\,\,h\,+\,6\,\,n\,+\,8\,)\,-\,(\,6\,\,n\,+\,2\,)}{h} \\ = \frac{6\,h}{h} \\ = \frac{h\,(\,6\,)}{h} \\ = 6 \end{array}$$

u(n) = 6n + 2

$$\begin{array}{c} u\,(\,n+h\,) = 6 \ (\,h\,+\,n\,) \ +\, 2 \\ = 6 \ h \ +\, 6 \ n \ +\, 2 \\ \frac{u\,(\,n+h\,) - u\,(\,n\,)}{h} = \frac{(6 \ h+6 \ n+2) - (6 \ n+2)}{h} \\ = \frac{6 \ h}{h} \\ = \frac{h\,(\,6\,)}{h} \\ = 6 \end{array}$$

$$\begin{array}{c} u\left(n\right) = 6 \ n + 2 \\ u\left(n + h\right) = 6 \ \left(h + n\right) + 2 \\ = 6 \ h + 6 \ n - 4 \\ \frac{u\left(n + h\right) - u\left(n\right)}{h} = \frac{(6 \ h + 6 \ n + 14) - (6 \ n + 2)}{h} \\ = \frac{6 \ h}{h} \\ = \frac{h\left(6\right)}{h} \\ = 6 \end{array}$$

Solution