3. Which of the following are correct calculations for difference quotient of: $v(b) = b^2 + 2b + 7$ $v(b) = b^2 + 2b + 7$ $v(b+h) = (b+h)^2 + 2(b+h) + 7$

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V(b) = b^{2} + 2b + 7
V(b+h) = (b+h)^{2} + 2(b+h) + 7
= b^{2} + 2bh + 2b + h^{2} + 2h + 7
\frac{V(b+h) - V(b)}{h} = \frac{\left(b^{2} + 2hb + 2b + h^{2} + 2h + 7\right) - \left((b+1)^{2} + 2(b+1) + 7\right)}{h}
= \frac{h^{2} + 2bh + 2h}{h}
= \frac{h(2b+h+2)}{h}
= 2b + h + 2
V(b) = b^{2} + 2b + 7
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\begin{array}{l} v\left(b\right) = b^{2} + 2b + 7 \\ v\left(b+h\right) = \left(b+h\right)^{2} + 2\left(b+h\right) + 7 \\ = b^{2} + 2bh + 4b + h^{2} + 4h + 10 \\ \frac{v\left(b+h\right) - v\left(b\right)}{h} = \frac{\left(b^{2} + 2hb + 4b + h^{2} + 4h + 10\right) - \left(b^{2} + 2b + 7\right)}{h} \\ = \frac{h^{2} + 2bh + 2h}{h} \\ = \frac{h\left(2b + h + 2\right)}{h} \\ = 2b + h + 2 \end{array}
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\begin{split} v\left(b\right) &= b^2 + 2\ b + 7 \\ v\left(b + h\right) &= \left(b + h\right)^2 + 2\ \left(b + h\right) + 7 \\ &= b^2 + 2\ b\ h + 2\ b + h^2 + 2\ h + 7 \\ \frac{v\left(b + h\right) - v\left(b\right)}{h} &= \frac{\left(b^2 + 2\ h\ b + 2\ b + h^2 + 2\ h + 7\right) - \left(b^2 + 2\ b + 7\right)}{h} \\ &= \frac{h^2 + 2\ b\ h + 2\ h}{h} \\ &= \frac{h\left(2\ b + h + 2\right)}{h} \\ &= 2\ b + h + 2 \end{split}
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\begin{split} v\left(b\right) &= b^2 + 2\ b + 7 \\ v\left(b + h\right) &= \left(b + h\right)^2 + 2\ \left(b + h\right) + 7 \\ &= b^2 + 2\ b\ h + h^2 + 6 \\ \frac{v\left(b + h\right) - v\left(b\right)}{h} &= \frac{\left(b^2 + 2\ h\ b + 6\ b + h^2 + 6\ h + 15\right) - \left(b^2 + 2\ b + 7\right)}{h} \\ &= \frac{h^2 + 2\ b\ h + 2\ h}{h} \\ &= \frac{h\left(2\ \left(b + 1\right) + h + 2\right)}{h} \\ &= 2\ b + h + 2 \end{split}
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Solution