2. Which of the following are correct calculations for difference quotient of: $a(v) = 9v^2 + 8v + 7$ $a(v) = 9v^2 + 8v + 7$ $a(v) = 9v^2 + 8v + 7$

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\begin{split} &a\,(\,v\,) = 9\,\,v^2\,+\,8\,\,v\,+\,7\\ &a\,(\,v\,+\,h\,) = 9\,\,\left(\,h\,+\,v\,\right)^{\,2}\,+\,8\,\,\left(\,h\,+\,v\,\right)^{\,}\,+\,7\\ &= 9\,\,h^2\,+\,18\,\,h\,\,v\,+\,8\,\,h\,+\,9\,\,v^2\,+\,8\,\,v\,+\,7\\ &\frac{a\,(\,v\,+\,h\,)\,-\,a\,(\,v\,)}{h} = \frac{\left(\,9\,\,h^2\,+\,18\,\,v\,\,h\,+\,8\,\,h\,+\,9\,\,v^2\,+\,8\,\,v\,+\,7\,\right)\,-\,\left(\,9\,\,\left(\,v\,+\,1\,\right)^{\,2}\,+\,8\,\,\left(\,v\,+\,1\,\right)\,+\,7\,\right)}{h}\\ &= \frac{9\,\,h^2\,+\,18\,\,v\,\,h\,+\,8\,\,h}{h}\\ &= \frac{h\,(\,9\,\,h\,+\,18\,\,v\,+\,8\,)}{h}\\ &= 9\,\,h\,+\,18\,\,v\,+\,8 \end{split}
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$$\begin{array}{l} a \ (v) = 9 \ v^2 + 8 \ v + 7 \\ a \ (v+h) = 9 \ (h+v)^2 + 8 \ (h+v) + 7 \\ = 9 \ h^2 + 18 \ h \ v + 26 \ h + 9 \ v^2 + 26 \ v + 24 \\ \frac{a \ (v+h) - a \ (v)}{h} = \frac{\left(9 \ h^2 + 18 \ v \ h + 26 \ h + 9 \ v^2 + 26 \ v + 24\right) - \left(9 \ v^2 + 8 \ v + 7\right)}{h} \\ = \frac{9 \ h^2 + 18 \ v \ h + 8 \ h}{h} \\ = \frac{h \ (9 \ h + 18 \ v + 8)}{h} \\ = 9 \ h + 18 \ v + 8 \end{array}$$

$$a(v) = 9 v^{2} + 8 v + 7$$

$$a(v+h) = 9 (h + v)^{2} + 8 (h + v) + 7$$

$$= 9 h^{2} + 18 h v + 8 h + 9 v^{2} + 8 v + 7$$

$$\frac{a(v+h) - a(v)}{h} = \frac{\left(9 h^{2} + 18 v h + 8 h + 9 v^{2} + 8 v + 7\right) - \left(9 v^{2} + 8 v + 7\right)}{h}$$

$$= \frac{9 h^{2} + 18 v h + 8 h}{h}$$

$$= \frac{h(9 h + 18 v + 8)}{h}$$

$$= 9 h + 18 v + 8$$

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\begin{split} a & (v) = 9 \ v^2 + 8 \ v + 7 \\ a & (v+h) = 9 \ (h+v)^2 + 8 \ (h+v) + 7 \\ = 9 \ h^2 + 18 \ h \ v - 10 \ h + 9 \ v^2 - 10 \ v + 8 \\ \frac{a \ (v+h) - a \ (v)}{h} = \frac{\left(9 \ h^2 + 18 \ v \ h + 44 \ h + 9 \ v^2 + 44 \ v + 59\right) - \left(9 \ v^2 + 8 \ v + 7\right)}{h} \\ = \frac{9 \ h^2 + 18 \ v \ h + 8 \ h}{h} \\ = \frac{h \ (9 \ h + 18 \ (v+1) + 8)}{h} \\ = 9 \ h + 18 \ v + 8 \end{split}
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Solution