1. Which of the following are correct calculations for difference quotient of: $w(j) = 2j^2 + 3j + 9$ $w(j) = 2j^2 + 3j + 9$ $w(j+h) = 2(h+j)^2 + 3(h+j) + 9$ $= 2h^2 + 4hj + 3h + 2j^2 + 3j + 9$

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 = 2 h^{2} + 4 h j + 3 h + 2 j^{2} + 3 j + 9 
\frac{w(j+h) - w(j)}{h} = \frac{\left(2 h^{2} + 4 j h + 3 h + 2 j^{2} + 3 j + 9\right) - \left(2 (j+1)^{2} + 3 (j+1) + 9\right)}{h} 
= \frac{2 h^{2} + 4 j h + 3 h}{h} 
= \frac{h(2 h + 4 j + 3)}{h} 
= 2 h + 4 j + 3 
w(j) = 2 j^{2} + 3 j + 9 
w(j+h) = 2 (h + j)^{2} + 3 (h + j) + 9
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\begin{split} &w\,(\,j\,+h\,)\,=\,2\,\,\left(\,h\,+\,j\,\right)^{\,2}\,+\,3\,\,\left(\,h\,+\,j\,\right)\,\,+\,9\\ &=\,2\,\,h^{\,2}\,+\,4\,\,h\,\,j\,\,+\,7\,\,h\,+\,2\,\,j^{\,2}\,+\,7\,\,j\,\,+\,14\\ &\frac{\,w\,(\,j\,+h\,)\,-\,w\,(\,j\,)\,}{h}\,=\,\frac{\left(\,2\,\,h^{\,2}\,+\,4\,\,j\,\,h\,+\,7\,\,h\,+\,2\,\,j^{\,2}\,+\,7\,\,j\,+\,14\,\right)\,-\,\left(\,2\,\,j^{\,2}\,+\,3\,\,j\,+\,9\,\right)}{h}\\ &=\,\frac{\,2\,\,h^{\,2}\,+\,4\,\,j\,\,h\,+\,3\,\,h}{h}\\ &=\,\frac{\,h\,(\,2\,\,h\,+\,4\,\,j\,+\,3\,)\,}{h}\\ &=\,2\,\,h\,+\,4\,\,j\,\,+\,3\,\end{split}
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 \begin{aligned} & w(j) = 2 j^2 + 3 j + 9 \\ & w(j+h) = 2 (h+j)^2 + 3 (h+j) + 9 \\ & = 2 h^2 + 4 h j + 3 h + 2 j^2 + 3 j + 9 \\ & \frac{w(j+h) - w(j)}{h} = \frac{\left(2 h^2 + 4 j h + 3 h + 2 j^2 + 3 j + 9\right) - \left(2 j^2 + 3 j + 9\right)}{h} \\ & = \frac{2 h^2 + 4 j h + 3 h}{h} \\ & = \frac{h(2 h + 4 j + 3)}{h} \\ & = 2 h + 4 j + 3 \end{aligned}
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\begin{split} &w\,(\,j\,)=2\,\,j^{\,2}\,+\,3\,\,j\,+\,9\\ &w\,(\,j\,+h)=2\,\,(\,h\,+\,j\,)^{\,2}\,+\,3\,\,(\,h\,+\,j\,)\,\,+\,9\\ &=2\,\,h^{\,2}\,+\,4\,\,h\,\,j\,-\,h\,+\,2\,\,j^{\,2}\,-\,j\,+\,8\\ &\frac{w\,(\,j\,+h)\,-\,w\,(\,j\,)}{h}=\frac{\left(2\,\,h^{\,2}\,+\,4\,\,j\,\,h\,+\,11\,\,h\,+\,2\,\,j^{\,2}\,+\,11\,\,j\,+\,23\right)\,-\,\left(2\,\,j^{\,2}\,+\,3\,\,j\,+\,9\right)}{h}\\ &=\frac{2\,h^{\,2}\,+\,4\,\,j\,\,h\,+\,3\,\,h}{h}\\ &=\frac{h\,(\,2\,\,h\,+\,4\,\,(\,j\,+\,1)\,+\,3\,)}{h}\\ &=2\,\,h\,+\,4\,\,j\,+\,3 \end{split}
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Solution