1. Which of the following are correct calculations for difference quotient of:  $p(k) = 2 k^2 + 8 k + 4$   $p(k) = 2 k^2 + 8 k + 4$   $p(k+h) = 2 (h+k)^2 + 8 (h+k) + 4$   $= 2 h^2 + 4 h k + 8 h + 2 k^2 + 8 k + 4$ 

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\begin{split} &\frac{p\,(k+h)\,-p\,(k)}{h} = \frac{\left(2\,h^2+4\,k\,h+8\,h+2\,k^2+8\,k+4\right) - \left(2\,\left(k+1\right)^2+8\,\left(k+1\right)+4\right)}{h} \\ &= \frac{2\,h^2+4\,k\,h+8\,h}{h} \\ &= \frac{h\,(2\,h+4\,k+8)}{h} \\ &= 2\,h\,+\,4\,k\,+\,8 \end{split} &= 2\,h\,+\,4\,k\,+\,8 \end{split} &p\,(k)\,= 2\,k^2\,+\,8\,k\,+\,4 &p\,(k+h)\,= 2\,\left(h\,+\,k\right)^2\,+\,8\,\left(h\,+\,k\right)\,+\,4 &= 2\,h^2\,+\,4\,h\,k\,+\,12\,h\,+\,2\,k^2\,+\,12\,k\,+\,14 &= 2\,h^2\,+\,4\,h\,k\,+\,12\,h\,+\,2\,k^2+12\,k+14\right) - \left(2\,k^2+8\,k+4\right)
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 \begin{array}{l} = 2 \; h \, + \, 4 \; k \, + \, 8 \\ \\ p \; (k) = 2 \; k^2 \, + \, 8 \; k \, + \, 4 \\ p \; (k + h) = 2 \; (h + k)^2 \, + \, 8 \; (h + k) \, + \, 4 \\ = 2 \; h^2 \, + \, 4 \; h \; k \, + \, 8 \; h \, + \, 2 \; k^2 \, + \, 8 \; k \, + \, 4 \\ \\ \frac{p \; (k + h) - p \; (k)}{h} = \frac{\left(2 \; h^2 + 4 \; k \; h + 8 \; h + 2 \; k^2 + 8 \; k + 4\right) - \left(2 \; k^2 + 8 \; k + 4\right)}{h} \\ = \frac{2 \; h^2 + 4 \; k \; h + 8 \; h}{h} \\ = \frac{h \; (2 \; h + 4 \; k + 8)}{h} \\ = 2 \; h \; + \; 4 \; k \; + \; 8 \\ \end{array}
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\begin{split} p\left(k\right) &= 2\ k^2 + 8\ k + 4 \\ p\left(k\!+\!h\right) &= 2\ \left(h+k\right)^2 + 8\ \left(h+k\right) + 4 \\ &= 2\ h^2 + 4\ h\ k + 4\ h + 2\ k^2 + 4\ k - 2 \\ &\frac{p\left(k\!+\!h\right) - p\left(k\right)}{h} = \frac{\left(2\ h^2\!+\!4\ k\ h\!+\!16\ h\!+\!2\ k^2\!+\!16\ k\!+\!28\right) - \left(2\ k^2\!+\!8\ k\!+\!4\right)}{h} \\ &= \frac{2\ h^2\!+\!4\ k\ h\!+\!8\ h}{h} \\ &= \frac{h\left(2\ h\!+\!4\ \left(k\!+\!1\right)\!+\!8\right)}{h} \\ &= 2\ h + 4\ k + 8 \end{split}
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## Solution

 $= \frac{2 h^2 + 4 k h + 8}{1} h$ 

 $=\frac{h(2h+4k+8)}{}$