

In[*]:= Expectation[x^3, x ≈ BinomialDistribution[k, p]]

期望 二项分布

Out[*]= $k p - 3 k p^2 + 3 k^2 p^2 + 2 k p^3 - 3 k^2 p^3 + k^3 p^3$

In[*]:= $k (k - 1) (k - 2) p^3 + 2 (k - 1) k p^2 + k p$

Out[*]= $k p + 2 (-1 + k) k p^2 + (-2 + k) (-1 + k) k p^3$

In[*]:= Expand[%5]

展开

Out[*]= $k p - 2 k p^2 + 2 k^2 p^2 + 2 k p^3 - 3 k^2 p^3 + k^3 p^3$

In[*]:= Collect[k p - 3 k p^2 + 3 k^2 p^2 + 2 k p^3 - 3 k^2 p^3 + k^3 p^3, p]

合并同类项

Out[*]= $k p + (-3 k + 3 k^2) p^2 + (2 k - 3 k^2 + k^3) p^3$

In[*]:= $\alpha * k * (1 - 2 \epsilon)^2 * ((k_1 + \beta k)^3 / (k + \beta k)^3 (1 - 2 \epsilon)^2 \Delta +$
 $(k_1 + \beta k)^2 / (k + \beta k)^2 (4 (1 - \epsilon) \epsilon \Delta_n + (-2 + 4 (1 - \epsilon) \epsilon) \Delta - \Delta_1) +$
 $(k_1 + \beta k) / (k + \beta k) (4 (-1 + \epsilon) \epsilon \Delta_n + (1 + (-1 + \epsilon) \epsilon) \Delta + \Delta_1) + (1 - \epsilon) \epsilon \Delta_n)$

Out[*]= $k \alpha (1 - 2 \epsilon)^2$
 $\left(\frac{\Delta (1 - 2 \epsilon)^2 (k \beta + k_1)^3}{(k + k \beta)^3} + (1 - \epsilon) \epsilon \Delta_n + \frac{(k \beta + k_1)^2 (\Delta (-2 + 4 (1 - \epsilon) \epsilon) - \Delta_1 + 4 (1 - \epsilon) \epsilon \Delta_n)}{(k + k \beta)^2} + \right.$
 $\left. \frac{(k \beta + k_1) (\Delta (1 + (-1 + \epsilon) \epsilon) + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n)}{k + k \beta} \right)$

In[*]:= $2 * (1 - \epsilon) * \epsilon + (1 - 2 \epsilon)^2 * (p_1 + \beta) / (1 + \beta) + k \alpha (1 - 2 \epsilon)^2$
 $\left(\frac{1}{(k + \beta k)^3} \Delta (1 - 2 \epsilon)^2 (k^3 \beta^3 + 3 k^2 \beta^2 k * p_1 + 3 k \beta (k^2 * p_1^2 - k * p_1^2 + k * p_1)) + \right.$
 $(k (k - 1) (k - 2) * p_1^3 + 3 (k - 1) k * p_1^2 + k * p_1) -$
 $(-1 + \epsilon) \epsilon \Delta_n + \frac{(k \beta + k p_1) (\Delta + \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n)}{k + \beta k} -$
 $\frac{1}{(k + \beta k)^2} (k^2 \beta^2 + 2 k \beta k * p_1 + (k^2 * p_1^2 - k * p_1^2 + k * p_1))$
 $\left. (2 \Delta + 4 \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n) \right)$

Out[*]= $2 (1 - \epsilon) \epsilon + \frac{(1 - 2 \epsilon)^2 (\beta + p_1)}{1 + \beta} + k \alpha (1 - 2 \epsilon)^2 \left(\frac{1}{(k + k \beta)^3} \Delta (1 - 2 \epsilon)^2 \right.$
 $(k^3 \beta^3 + k p_1 + 3 k^3 \beta^2 p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3 + 3 k \beta (k p_1 - k p_1^2 + k^2 p_1^2)) -$
 $(-1 + \epsilon) \epsilon \Delta_n + \frac{(k \beta + k p_1) (\Delta + \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n)}{k + k \beta} - \frac{1}{(k + k \beta)^2}$
 $\left. (k^2 \beta^2 + k p_1 + 2 k^2 \beta p_1 - k p_1^2 + k^2 p_1^2) (2 \Delta + 4 \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n) \right)$

In[*]:=

$$\begin{aligned}
& 2 (1 - \epsilon) \epsilon + \frac{(1 - 2 \epsilon)^2 (\beta + p_1)}{1 + \beta} + \\
& k \alpha (1 - 2 \epsilon)^2 \left(\frac{1}{(k + k \beta)^3} \Delta (1 - 2 \epsilon)^2 (k^3 \beta^3 + k p_1 + 3 k^3 \beta^2 p_1 + 3 (-1 + k) k p_1^2 + \right. \\
& \quad \left. (-2 + k) (-1 + k) k p_1^3 + 3 k \beta (k p_1 - k p_1^2 + k^2 p_1^2)) - \right. \\
& \quad \left. (-1 + \epsilon) \epsilon \Delta_n + \frac{(k \beta + k p_1) (\Delta + \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n)}{k + k \beta} - \right. \\
& \quad \left. \frac{1}{(k + k \beta)^2} (k^2 \beta^2 + k p_1 + 2 k^2 \beta p_1 - k p_1^2 + k^2 p_1^2) \right. \\
& \quad \left. (2 \Delta + 4 \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n) \right) /. \{\epsilon \rightarrow 0, \beta \rightarrow 0\}
\end{aligned}$$

Out[*]=

$$p_1 + k \alpha \left(\frac{\Delta (k p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3)}{k^3} + p_1 (\Delta + \Delta_1) - \frac{(k p_1 - k p_1^2 + k^2 p_1^2) (\Delta + \Delta_1)}{k^2} \right)$$

In[*]:=

$$\begin{aligned}
& p_1 + k \alpha \left(\frac{\Delta (k p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3)}{k^3} + \right. \\
& \quad \left. p_1 (\Delta + \Delta_1) - \frac{(k p_1 - k p_1^2 + k^2 p_1^2) (\Delta + \Delta_1)}{k^2} \right) /. \{\Delta_1 \rightarrow \Delta_n - \Delta\}
\end{aligned}$$

Out[*]=

$$p_1 + k \alpha \left(\frac{\Delta (k p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3)}{k^3} + p_1 \Delta_n - \frac{(k p_1 - k p_1^2 + k^2 p_1^2) (\Delta + \Delta_n)}{k^2} \right)$$

In[*]=

$$1 - p_1 + k \alpha \left(\frac{\Delta (k p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3)}{k^3} + p_1 \Delta_n - \frac{(k p_1 - k p_1^2 + k^2 p_1^2) (\Delta + \Delta_n)}{k^2} \right)$$

Out[*]=

$$1 - p_1 + k \alpha \left(\frac{\Delta (k p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3)}{k^3} + p_1 \Delta_n - \frac{(k p_1 - k p_1^2 + k^2 p_1^2) (\Delta + \Delta_n)}{k^2} \right)$$

In[*]:=

$$\begin{aligned}
& \text{Collect}[\text{Expand}[1 - p_1 + k \alpha \left(\frac{\Delta (k p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3)}{k^3} + \right. \\
& \quad \left. p_1 \Delta_n - \frac{(k p_1 - k p_1^2 + k^2 p_1^2) (\Delta + \Delta_n)}{k^2} \right)], p_1]
\end{aligned}$$

Out[*]=

$$\begin{aligned}
& 1 + \left(-3 \alpha \Delta + \frac{2 \alpha \Delta}{k} + k \alpha \Delta \right) p_1^3 + \\
& p_1^2 \left(4 \alpha \Delta - \frac{3 \alpha \Delta}{k} - k \alpha \Delta + \alpha \Delta_n - k \alpha \Delta_n \right) + p_1 \left(-1 - \alpha \Delta + \frac{\alpha \Delta}{k} - \alpha \Delta_n + k \alpha \Delta_n \right)
\end{aligned}$$

$$\begin{aligned}
In[*] &:= \frac{1}{N} * (1 - p_1) EP - \frac{1}{N} * p_1 (1 - EP) /. \{EP \rightarrow \left(p_1 + k \alpha \right. \\
&\quad \left. \left(\frac{\Delta (k p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3)}{k^3} + p_1 \Delta_n - \frac{(k p_1 - k p_1^2 + k^2 p_1^2) (\Delta + \Delta_n)}{k^2} \right) \right) \} \\
Out[*] &:= - \frac{p_1 \left(1 - p_1 - k \alpha \left(\frac{\Delta (k p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3)}{k^3} + p_1 \Delta_n - \frac{(k p_1 - k p_1^2 + k^2 p_1^2) (\Delta + \Delta_n)}{k^2} \right) \right)}{N} + \frac{1}{N} (1 - p_1) \left(p_1 + \right. \\
&\quad \left. k \alpha \left(\frac{\Delta (k p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3)}{k^3} + p_1 \Delta_n - \frac{(k p_1 - k p_1^2 + k^2 p_1^2) (\Delta + \Delta_n)}{k^2} \right) \right) \\
In[*] &:= \text{Solve} \left[\left(- \frac{1}{N} p_1 \left(1 - p_1 - k \alpha \left(\frac{\Delta (k p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3)}{k^3} + \right. \right. \right. \right. \\
&\quad \left. \left. \left. p_1 \Delta_n - \frac{(k p_1 - k p_1^2 + k^2 p_1^2) (\Delta + \Delta_n)}{k^2} \right) \right) \right) + \right. \\
&\quad \left. \frac{1}{N} (1 - p_1) \left(p_1 + k \alpha \left(\frac{\Delta (k p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3)}{k^3} + \right. \right. \right. \right. \\
&\quad \left. \left. \left. p_1 \Delta_n - \frac{(k p_1 - k p_1^2 + k^2 p_1^2) (\Delta + \Delta_n)}{k^2} \right) \right) \right) \right] == 0, p_1] \\
Out[*] &:= \left\{ \{p_1 \rightarrow 0\}, \{p_1 \rightarrow 1\}, \left\{ p_1 \rightarrow \frac{-\Delta + k \Delta_n}{(-2 + k) \Delta} \right\} \right\}
\end{aligned}$$

$$In[*]:= \frac{1}{N} \star (1 - p_1) EP - \frac{1}{N} \star p_1 (1 - EP) /. \quad \begin{matrix} \text{数值运算} & \text{数值运算} \end{matrix}$$

$$\left\{ EP \rightarrow \left(2 (1 - \epsilon) \epsilon + \frac{(1 - 2 \epsilon)^2 (\beta + p_1)}{1 + \beta} + k \alpha (1 - 2 \epsilon)^2 \left(\frac{1}{(k + k \beta)^3} \Delta (1 - 2 \epsilon)^2 (k^3 \beta^3 + k p_1 + 3 k^3 \beta^2 p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3 + 3 k \beta (k p_1 - k p_1^2 + k^2 p_1^2)) - (-1 + \epsilon) \in \Delta_n + \frac{(k \beta + k p_1) (\Delta + \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n)}{k + k \beta} - \frac{1}{(k + k \beta)^2} (k^2 \beta^2 + k p_1 + 2 k^2 \beta p_1 - k p_1^2 + k^2 p_1^2) (2 \Delta + 4 \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n) \right) \right\}$$

$$\begin{aligned} Out[*]:= & -\frac{1}{N} p_1 \left(1 - 2 (1 - \epsilon) \epsilon - \frac{(1 - 2 \epsilon)^2 (\beta + p_1)}{1 + \beta} - k \alpha (1 - 2 \epsilon)^2 \left(\frac{1}{(k + k \beta)^3} \Delta (1 - 2 \epsilon)^2 (k^3 \beta^3 + k p_1 + 3 k^3 \beta^2 p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3 + 3 k \beta (k p_1 - k p_1^2 + k^2 p_1^2)) - (-1 + \epsilon) \in \Delta_n + \frac{(k \beta + k p_1) (\Delta + \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n)}{k + k \beta} - \frac{1}{(k + k \beta)^2} (k^2 \beta^2 + k p_1 + 2 k^2 \beta p_1 - k p_1^2 + k^2 p_1^2) (2 \Delta + 4 \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n) \right) \right) + \\ & \frac{1}{N} (1 - p_1) \left(2 (1 - \epsilon) \epsilon + \frac{(1 - 2 \epsilon)^2 (\beta + p_1)}{1 + \beta} + k \alpha (1 - 2 \epsilon)^2 \left(\frac{1}{(k + k \beta)^3} \Delta (1 - 2 \epsilon)^2 (k^3 \beta^3 + k p_1 + 3 k^3 \beta^2 p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3 + 3 k \beta (k p_1 - k p_1^2 + k^2 p_1^2)) - (-1 + \epsilon) \in \Delta_n + \frac{(k \beta + k p_1) (\Delta + \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n)}{k + k \beta} - \frac{1}{(k + k \beta)^2} (k^2 \beta^2 + k p_1 + 2 k^2 \beta p_1 - k p_1^2 + k^2 p_1^2) (2 \Delta + 4 \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n) \right) \right) \end{aligned}$$

In[*]:= **Solve**[
 解方程

$$\left(-\frac{1}{N} p_1 \left(1 - 2 (1 - \epsilon) \epsilon - \frac{(1 - 2 \epsilon)^2 (\beta + p_1)}{1 + \beta} - k \alpha (1 - 2 \epsilon)^2 \left(\frac{1}{(k + k \beta)^3} \Delta (1 - 2 \epsilon)^2 (k^3 \beta^3 + k p_1 + 3 k^3 \beta^2 p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3 + 3 k \beta (k p_1 - k p_1^2 + k^2 p_1^2) \right) - (-1 + \epsilon) \epsilon \Delta_n + \frac{(k \beta + k p_1) (\Delta + \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n)}{k + k \beta} - \frac{1}{(k + k \beta)^2} (k^2 \beta^2 + k p_1 + 2 k^2 \beta p_1 - k p_1^2 + k^2 p_1^2) (2 \Delta + 4 \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n) \right) \right) + \frac{1}{N} (1 - p_1) \left(2 (1 - \epsilon) \epsilon + \frac{(1 - 2 \epsilon)^2 (\beta + p_1)}{1 + \beta} + k \alpha (1 - 2 \epsilon)^2 \left(\frac{1}{(k + k \beta)^3} \Delta (1 - 2 \epsilon)^2 (k^3 \beta^3 + k p_1 + 3 k^3 \beta^2 p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3 + 3 k \beta (k p_1 - k p_1^2 + k^2 p_1^2) \right) - (-1 + \epsilon) \epsilon \Delta_n + \frac{(k \beta + k p_1) (\Delta + \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n)}{k + k \beta} - \frac{1}{(k + k \beta)^2} (k^2 \beta^2 + k p_1 + 2 k^2 \beta p_1 - k p_1^2 + k^2 p_1^2) (2 \Delta + 4 \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n) \right) \right) = 0, p_1 \right]$$

Out[*]:= $\left\{ \left\{ p_1 \rightarrow \right. \right.$

$$\begin{aligned} & - \left(\left(-3 \alpha \Delta + 5 k \alpha \Delta - 2 k^2 \alpha \Delta - k \alpha \beta \Delta + k^2 \alpha \beta \Delta + 24 \alpha \Delta \epsilon - 36 k \alpha \Delta \epsilon + 12 k^2 \alpha \Delta \epsilon + 12 k \alpha \beta \Delta \epsilon - \right. \right. \\ & 12 k^2 \alpha \beta \Delta \epsilon - 72 \alpha \Delta \epsilon^2 + 100 k \alpha \Delta \epsilon^2 - 28 k^2 \alpha \Delta \epsilon^2 - 44 k \alpha \beta \Delta \epsilon^2 + 44 k^2 \alpha \beta \Delta \epsilon^2 + \\ & 96 \alpha \Delta \epsilon^3 - 128 k \alpha \Delta \epsilon^3 + 32 k^2 \alpha \Delta \epsilon^3 + 64 k \alpha \beta \Delta \epsilon^3 - 64 k^2 \alpha \beta \Delta \epsilon^3 - 48 \alpha \Delta \epsilon^4 + \\ & 64 k \alpha \Delta \epsilon^4 - 16 k^2 \alpha \Delta \epsilon^4 - 32 k \alpha \beta \Delta \epsilon^4 + 32 k^2 \alpha \beta \Delta \epsilon^4 + k \alpha \Delta_1 - k^2 \alpha \Delta_1 + k \alpha \beta \Delta_1 - \\ & k^2 \alpha \beta \Delta_1 - 4 k \alpha \epsilon \Delta_1 + 4 k^2 \alpha \epsilon \Delta_1 - 4 k \alpha \beta \epsilon \Delta_1 + 4 k^2 \alpha \beta \epsilon \Delta_1 + 4 k \alpha \epsilon^2 \Delta_1 - 4 k^2 \alpha \epsilon^2 \Delta_1 + \\ & 4 k \alpha \beta \epsilon^2 \Delta_1 - 4 k^2 \alpha \beta \epsilon^2 \Delta_1 - 4 k \alpha \epsilon \Delta_n + 4 k^2 \alpha \epsilon \Delta_n - 4 k \alpha \beta \epsilon \Delta_n + 4 k^2 \alpha \beta \epsilon \Delta_n + \\ & 20 k \alpha \epsilon^2 \Delta_n - 20 k^2 \alpha \epsilon^2 \Delta_n + 20 k \alpha \beta \epsilon^2 \Delta_n - 20 k^2 \alpha \beta \epsilon^2 \Delta_n - 32 k \alpha \epsilon^3 \Delta_n + 32 k^2 \alpha \epsilon^3 \Delta_n - 32 \\ & k \alpha \beta \epsilon^3 \Delta_n + 32 k^2 \alpha \beta \epsilon^3 \Delta_n + 16 k \alpha \epsilon^4 \Delta_n - 16 k^2 \alpha \epsilon^4 \Delta_n + 16 k \alpha \beta \epsilon^4 \Delta_n - 16 k^2 \alpha \beta \epsilon^4 \Delta_n \Big) / \\ & \left(3 \left(2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \epsilon + 24 k \alpha \Delta \epsilon - 8 k^2 \alpha \Delta \epsilon + 48 \alpha \Delta \epsilon^2 - 72 k \alpha \Delta \epsilon^2 + 24 k^2 \right. \right. \\ & \alpha \Delta \epsilon^2 - 64 \alpha \Delta \epsilon^3 + 96 k \alpha \Delta \epsilon^3 - 32 k^2 \alpha \Delta \epsilon^3 + 32 \alpha \Delta \epsilon^4 - 48 k \alpha \Delta \epsilon^4 + 16 k^2 \alpha \Delta \epsilon^4 \Big) \Big) - \\ & \left(2^{1/3} \left(- \left(-3 \alpha \Delta + 5 k \alpha \Delta - 2 k^2 \alpha \Delta - k \alpha \beta \Delta + k^2 \alpha \beta \Delta + 24 \alpha \Delta \epsilon - 36 k \alpha \Delta \epsilon + 12 k^2 \alpha \Delta \epsilon + \right. \right. \right. \\ & 12 k \alpha \beta \Delta \epsilon - 12 k^2 \alpha \beta \Delta \epsilon - 72 \alpha \Delta \epsilon^2 + 100 k \alpha \Delta \epsilon^2 - 28 k^2 \alpha \Delta \epsilon^2 - 44 k \alpha \beta \Delta \epsilon^2 + \\ & 44 k^2 \alpha \beta \Delta \epsilon^2 + 96 \alpha \Delta \epsilon^3 - 128 k \alpha \Delta \epsilon^3 + 32 k^2 \alpha \Delta \epsilon^3 + 64 k \alpha \beta \Delta \epsilon^3 - \\ & 64 k^2 \alpha \beta \Delta \epsilon^3 - 48 \alpha \Delta \epsilon^4 + 64 k \alpha \Delta \epsilon^4 - 16 k^2 \alpha \Delta \epsilon^4 - 32 k \alpha \beta \Delta \epsilon^4 + 32 k^2 \alpha \beta \Delta \epsilon^4 + \\ & k \alpha \Delta_1 - k^2 \alpha \Delta_1 + k \alpha \beta \Delta_1 - k^2 \alpha \beta \Delta_1 - 4 k \alpha \epsilon \Delta_1 + 4 k^2 \alpha \epsilon \Delta_1 - 4 k \alpha \beta \epsilon \Delta_1 + \\ & 4 k^2 \alpha \beta \epsilon \Delta_1 + 4 k \alpha \epsilon^2 \Delta_1 - 4 k^2 \alpha \epsilon^2 \Delta_1 + 4 k \alpha \beta \epsilon^2 \Delta_1 - 4 k^2 \alpha \beta \epsilon^2 \Delta_1 - \\ & 4 k \alpha \epsilon \Delta_n + 4 k^2 \alpha \epsilon \Delta_n - 4 k \alpha \beta \epsilon \Delta_n + 4 k^2 \alpha \beta \epsilon \Delta_n + 20 k \alpha \epsilon^2 \Delta_n - 20 k^2 \alpha \epsilon^2 \Delta_n + \\ & 20 k \alpha \beta \epsilon^2 \Delta_n - 20 k^2 \alpha \beta \epsilon^2 \Delta_n - 32 k \alpha \epsilon^3 \Delta_n + 32 k^2 \alpha \epsilon^3 \Delta_n - 32 k \alpha \beta \epsilon^3 \Delta_n + \\ & 32 k^2 \alpha \beta \epsilon^3 \Delta_n + 16 k \alpha \epsilon^4 \Delta_n - 16 k^2 \alpha \epsilon^4 \Delta_n + 16 k \alpha \beta \epsilon^4 \Delta_n - 16 k^2 \alpha \beta \epsilon^4 \Delta_n \Big)^2 + \\ & 3 \left(2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \epsilon + 24 k \alpha \Delta \epsilon - 8 k^2 \alpha \Delta \epsilon + 48 \alpha \Delta \epsilon^2 - 72 k \alpha \Delta \epsilon^2 + 24 \right. \\ & k^2 \alpha \Delta \epsilon^2 - 64 \alpha \Delta \epsilon^3 + 96 k \alpha \Delta \epsilon^3 - 32 k^2 \alpha \Delta \epsilon^3 + 32 \alpha \Delta \epsilon^4 - 48 k \alpha \Delta \epsilon^4 + 16 k^2 \alpha \Delta \epsilon^4 \Big) \\ & \left(-k \beta - 2 k \beta^2 - k \beta^3 + \alpha \Delta - 2 k \alpha \Delta + k^2 \alpha \Delta + k \alpha \beta \Delta - 2 k^2 \alpha \beta \Delta - 4 k \epsilon - 8 k \beta \epsilon - 4 k \beta^2 \epsilon - \right. \\ & 8 \alpha \Delta \epsilon + 12 k \alpha \Delta \epsilon - 5 k^2 \alpha \Delta \epsilon - 12 k \alpha \beta \Delta \epsilon + 14 k^2 \alpha \beta \Delta \epsilon - 5 k^2 \alpha \beta^2 \Delta \epsilon + 4 k \epsilon^2 + \\ & 8 k \beta \epsilon^2 + 4 k \beta^2 \epsilon^2 + 24 \alpha \Delta \epsilon^2 - 28 k \alpha \Delta \epsilon^2 + 9 k^2 \alpha \Delta \epsilon^2 + 44 k \alpha \beta \Delta \epsilon^2 - 38 k^2 \alpha \beta \Delta \epsilon^2 + \\ & 25 k^2 \alpha \beta^2 \Delta \epsilon^2 - 32 \alpha \Delta \epsilon^3 + 32 k \alpha \Delta \epsilon^3 - 8 k^2 \alpha \Delta \epsilon^3 - 64 k \alpha \beta \Delta \epsilon^3 + 48 k^2 \alpha \beta \Delta \epsilon^3 - \\ & 40 k^2 \alpha \beta^2 \Delta \epsilon^3 + 16 \alpha \Delta \epsilon^4 - 16 k \alpha \Delta \epsilon^4 + 4 k^2 \alpha \Delta \epsilon^4 + 32 k \alpha \beta \Delta \epsilon^4 - 24 k^2 \alpha \beta \Delta \epsilon^4 + \\ & 20 k^2 \alpha \beta^2 \Delta \epsilon^4 - k \alpha \Delta_1 + k^2 \alpha \Delta_1 - k \alpha \beta \Delta_1 - k^2 \alpha \beta^2 \Delta_1 + 4 k \alpha \epsilon \Delta_1 - 4 k^2 \alpha \epsilon \Delta_1 + \\ & 4 k \alpha \beta \epsilon \Delta_1 + 4 k^2 \alpha \beta^2 \epsilon \Delta_1 - 4 k \alpha \epsilon^2 \Delta_1 + 4 k^2 \alpha \epsilon^2 \Delta_1 - 4 k \alpha \beta \epsilon^2 \Delta_1 - 4 k^2 \alpha \beta^2 \epsilon^2 \Delta_1 + \end{aligned}$$

$$\begin{aligned} & \left(4k\alpha\epsilon\Delta_n - 4k^2\alpha\epsilon\Delta_n + 4k^2\alpha\beta\epsilon\Delta_n - 20k\alpha\epsilon^2\Delta_n + 20k^2\alpha\epsilon^2\Delta_n - \right. \\ & 20k\alpha\beta\epsilon^2\Delta_n - 20k^2\alpha\beta\epsilon^2\Delta_n + 32k\alpha\epsilon^3\Delta_n - 32k^2\alpha\epsilon^3\Delta_n + 32k\alpha\beta\epsilon^3\Delta_n + \\ & \left. 32k^2\alpha\beta\epsilon^3\Delta_n - 16k\alpha\epsilon^4\Delta_n + 16k^2\alpha\epsilon^4\Delta_n - 16k\alpha\beta\epsilon^4\Delta_n - 16k^2\alpha\beta\epsilon^4\Delta_n \right) \Bigg) \Bigg) / \\ & \left(3 \left(2\alpha\Delta - 3k\alpha\Delta + k^2\alpha\Delta - 16\alpha\Delta\epsilon + 24k\alpha\Delta\epsilon - 8k^2\alpha\Delta\epsilon + 48\alpha\Delta\epsilon^2 - \right. \right. \\ & 72k\alpha\Delta\epsilon^2 + 24k^2\alpha\Delta\epsilon^2 - 64\alpha\Delta\epsilon^3 + 96k\alpha\Delta\epsilon^3 - \\ & 32k^2\alpha\Delta\epsilon^3 + 32\alpha\Delta\epsilon^4 - 48k\alpha\Delta\epsilon^4 + 16k^2\alpha\Delta\epsilon^4 \Bigg) \\ & \left(-2 \left(-3\alpha\Delta + 5k\alpha\Delta - 2k^2\alpha\Delta - k\alpha\beta\Delta + k^2\alpha\beta\Delta + 24\alpha\Delta\epsilon - 36k\alpha\Delta\epsilon + 12k^2\alpha\Delta\epsilon + \right. \right. \\ & 12k\alpha\beta\Delta\epsilon - 12k^2\alpha\beta\Delta\epsilon - 72\alpha\Delta\epsilon^2 + 100k\alpha\Delta\epsilon^2 - 28k^2\alpha\Delta\epsilon^2 - 44k\alpha\beta\Delta\epsilon^2 + \\ & 44k^2\alpha\beta\Delta\epsilon^2 + 96\alpha\Delta\epsilon^3 - 128k\alpha\Delta\epsilon^3 + 32k^2\alpha\Delta\epsilon^3 + 64k\alpha\beta\Delta\epsilon^3 - 64k^2\alpha\beta\Delta\epsilon^3 - \\ & 48\alpha\Delta\epsilon^4 + 64k\alpha\Delta\epsilon^4 - 16k^2\alpha\Delta\epsilon^4 - 32k\alpha\beta\Delta\epsilon^4 + 32k^2\alpha\beta\Delta\epsilon^4 + \\ & k\alpha\Delta_1 - k^2\alpha\Delta_1 + k\alpha\beta\Delta_1 - k^2\alpha\beta\Delta_1 - 4k\alpha\epsilon\Delta_1 + 4k^2\alpha\epsilon\Delta_1 - 4k\alpha\beta\epsilon\Delta_1 + \\ & 4k^2\alpha\beta\epsilon\Delta_1 + 4k\alpha\epsilon^2\Delta_1 - 4k^2\alpha\epsilon^2\Delta_1 + 4k\alpha\beta\epsilon^2\Delta_1 - 4k^2\alpha\beta\epsilon^2\Delta_1 - \\ & 4k\alpha\epsilon\Delta_n + 4k^2\alpha\epsilon\Delta_n - 4k\alpha\beta\epsilon\Delta_n + 4k^2\alpha\beta\epsilon\Delta_n + 20k\alpha\epsilon^2\Delta_n - 20k^2\alpha\epsilon^2\Delta_n + \\ & 20k\alpha\beta\epsilon^2\Delta_n - 20k^2\alpha\beta\epsilon^2\Delta_n - 32k\alpha\epsilon^3\Delta_n + 32k^2\alpha\epsilon^3\Delta_n - 32k\alpha\beta\epsilon^3\Delta_n + \\ & 32k^2\alpha\beta\epsilon^3\Delta_n + 16k\alpha\epsilon^4\Delta_n - 16k^2\alpha\epsilon^4\Delta_n + 16k\alpha\beta\epsilon^4\Delta_n - 16k^2\alpha\beta\epsilon^4\Delta_n \Bigg)^3 + \\ & 9 \left(2\alpha\Delta - 3k\alpha\Delta + k^2\alpha\Delta - 16\alpha\Delta\epsilon + 24k\alpha\Delta\epsilon - 8k^2\alpha\Delta\epsilon + 48\alpha\Delta\epsilon^2 - \right. \\ & 72k\alpha\Delta\epsilon^2 + 24k^2\alpha\Delta\epsilon^2 - 64\alpha\Delta\epsilon^3 + 96k\alpha\Delta\epsilon^3 - 32k^2\alpha\Delta\epsilon^3 + 32\alpha\Delta\epsilon^4 - \\ & 48k\alpha\Delta\epsilon^4 + 16k^2\alpha\Delta\epsilon^4 \Bigg) \left(-3\alpha\Delta + 5k\alpha\Delta - 2k^2\alpha\Delta - k\alpha\beta\Delta + k^2\alpha\beta\Delta + 24\alpha\Delta\epsilon - \right. \\ & 36k\alpha\Delta\epsilon + 12k^2\alpha\Delta\epsilon + 12k\alpha\beta\Delta\epsilon - 12k^2\alpha\beta\Delta\epsilon - 72\alpha\Delta\epsilon^2 + 100k\alpha\Delta\epsilon^2 - \\ & 28k^2\alpha\Delta\epsilon^2 - 44k\alpha\beta\Delta\epsilon^2 + 44k^2\alpha\beta\Delta\epsilon^2 + 96\alpha\Delta\epsilon^3 - 128k\alpha\Delta\epsilon^3 + 32k^2\alpha\Delta\epsilon^3 + \\ & 64k\alpha\beta\Delta\epsilon^3 - 64k^2\alpha\beta\Delta\epsilon^3 - 48\alpha\Delta\epsilon^4 + 64k\alpha\Delta\epsilon^4 - 16k^2\alpha\Delta\epsilon^4 - 32k\alpha\beta\Delta\epsilon^4 + \\ & 32k^2\alpha\beta\Delta\epsilon^4 + k\alpha\Delta_1 - k^2\alpha\Delta_1 + k\alpha\beta\Delta_1 - k^2\alpha\beta\Delta_1 - 4k\alpha\epsilon\Delta_1 + 4k^2\alpha\epsilon\Delta_1 - \\ & 4k\alpha\beta\epsilon\Delta_1 + 4k^2\alpha\beta\epsilon\Delta_1 + 4k\alpha\epsilon^2\Delta_1 - 4k^2\alpha\epsilon^2\Delta_1 + 4k\alpha\beta\epsilon^2\Delta_1 - 4k^2\alpha\beta\epsilon^2\Delta_1 - \\ & 4k\alpha\epsilon\Delta_n + 4k^2\alpha\epsilon\Delta_n - 4k\alpha\beta\epsilon\Delta_n + 4k^2\alpha\beta\epsilon\Delta_n + 20k\alpha\epsilon^2\Delta_n - 20k^2\alpha\epsilon^2\Delta_n + \\ & 20k\alpha\beta\epsilon^2\Delta_n - 20k^2\alpha\beta\epsilon^2\Delta_n - 32k\alpha\epsilon^3\Delta_n + 32k^2\alpha\epsilon^3\Delta_n - 32k\alpha\beta\epsilon^3\Delta_n + \\ & 32k^2\alpha\beta\epsilon^3\Delta_n + 16k\alpha\epsilon^4\Delta_n - 16k^2\alpha\epsilon^4\Delta_n + 16k\alpha\beta\epsilon^4\Delta_n - 16k^2\alpha\beta\epsilon^4\Delta_n \Bigg) \\ & \left(-k\beta - 2k\beta^2 - k\beta^3 + \alpha\Delta - 2k\alpha\Delta + k^2\alpha\Delta + k\alpha\beta\Delta - 2k^2\alpha\beta\Delta - 4k\epsilon - \right. \\ & 8k\beta\epsilon - 4k\beta^2\epsilon - 8\alpha\Delta\epsilon + 12k\alpha\Delta\epsilon - 5k^2\alpha\Delta\epsilon - 12k\alpha\beta\Delta\epsilon + 14k^2\alpha\beta\Delta\epsilon - \\ & 5k^2\alpha\beta^2\Delta\epsilon + 4k\epsilon^2 + 8k\beta\epsilon^2 + 4k\beta^2\epsilon^2 + 24\alpha\Delta\epsilon^2 - 28k\alpha\Delta\epsilon^2 + 9k^2\alpha\Delta\epsilon^2 + \\ & 44k\alpha\beta\Delta\epsilon^2 - 38k^2\alpha\beta\Delta\epsilon^2 + 25k^2\alpha\beta^2\Delta\epsilon^2 - 32\alpha\Delta\epsilon^3 + 32k\alpha\Delta\epsilon^3 - \\ & 8k^2\alpha\Delta\epsilon^3 - 64k\alpha\beta\Delta\epsilon^3 + 48k^2\alpha\beta\Delta\epsilon^3 - 40k^2\alpha\beta^2\Delta\epsilon^3 + 16\alpha\Delta\epsilon^4 - \\ & 16k\alpha\Delta\epsilon^4 + 4k^2\alpha\Delta\epsilon^4 + 32k\alpha\beta\Delta\epsilon^4 - 24k^2\alpha\beta\Delta\epsilon^4 + 20k^2\alpha\beta^2\Delta\epsilon^4 - \\ & k\alpha\Delta_1 + k^2\alpha\Delta_1 - k\alpha\beta\Delta_1 - k^2\alpha\beta^2\Delta_1 + 4k\alpha\epsilon\Delta_1 - 4k^2\alpha\epsilon\Delta_1 + 4k\alpha\beta\epsilon\Delta_1 + \\ & 4k^2\alpha\beta^2\epsilon\Delta_1 - 4k\alpha\epsilon^2\Delta_1 + 4k^2\alpha\epsilon^2\Delta_1 - 4k\alpha\beta\epsilon^2\Delta_1 - 4k^2\alpha\beta^2\epsilon^2\Delta_1 + \\ & 4k\alpha\epsilon\Delta_n - 4k^2\alpha\epsilon\Delta_n + 4k\alpha\beta\epsilon\Delta_n + 4k^2\alpha\beta^2\epsilon\Delta_n - 20k\alpha\epsilon^2\Delta_n + 20k^2\alpha\epsilon^2\Delta_n - \\ & 20k\alpha\beta\epsilon^2\Delta_n - 20k^2\alpha\beta^2\epsilon^2\Delta_n + 32k\alpha\epsilon^3\Delta_n - 32k^2\alpha\epsilon^3\Delta_n + 32k\alpha\beta\epsilon^3\Delta_n + \\ & 32k^2\alpha\beta^2\epsilon^3\Delta_n - 16k\alpha\epsilon^4\Delta_n + 16k^2\alpha\epsilon^4\Delta_n - 16k\alpha\beta\epsilon^4\Delta_n - 16k^2\alpha\beta^2\epsilon^4\Delta_n \Bigg) - \\ & 27k \left(2\alpha\Delta - 3k\alpha\Delta + k^2\alpha\Delta - 16\alpha\Delta\epsilon + 24k\alpha\Delta\epsilon - 8k^2\alpha\Delta\epsilon + 48\alpha\Delta\epsilon^2 - \right. \\ & 72k\alpha\Delta\epsilon^2 + 24k^2\alpha\Delta\epsilon^2 - 64\alpha\Delta\epsilon^3 + 96k\alpha\Delta\epsilon^3 - \\ & \left. 32k^2\alpha\Delta\epsilon^3 + 32\alpha\Delta\epsilon^4 - 48k\alpha\Delta\epsilon^4 + 16k^2\alpha\Delta\epsilon^4 \right)^2 \\ & \left(\beta + 2\beta^2 + \beta^3 + k\alpha\beta\Delta + 2\epsilon + 2\beta\epsilon - 2\beta^2\epsilon - 2\beta^3\epsilon - 5k\alpha\beta\Delta\epsilon + 2k\alpha\beta^2\Delta\epsilon - \right. \\ & k\alpha\beta^3\Delta\epsilon - 2\epsilon^2 - 2\beta\epsilon^2 + 2\beta^2\epsilon^2 + 2\beta^3\epsilon^2 + 9k\alpha\beta\Delta\epsilon^2 - 10k\alpha\beta^2\Delta\epsilon^2 + \\ & 5k\alpha\beta^3\Delta\epsilon^2 - 8k\alpha\beta\Delta\epsilon^3 + 16k\alpha\beta^2\Delta\epsilon^3 - 8k\alpha\beta^3\Delta\epsilon^3 + 4k\alpha\beta\Delta\epsilon^4 - 8k\alpha\beta^2\Delta\epsilon^4 + \\ & 4k\alpha\beta^3\Delta\epsilon^4 + k\alpha\beta\Delta_1 + k\alpha\beta^2\Delta_1 - 4k\alpha\beta\epsilon\Delta_1 - 4k\alpha\beta^2\epsilon\Delta_1 + 4k\alpha\beta\epsilon^2\Delta_1 + \\ & 4k\alpha\beta^2\epsilon^2\Delta_1 + k\alpha\epsilon\Delta_n - k\alpha\beta\epsilon\Delta_n - k\alpha\beta^2\epsilon\Delta_n + k\alpha\beta^3\epsilon\Delta_n - 5k\alpha\epsilon^2\Delta_n + \\ & 5k\alpha\beta\epsilon^2\Delta_n + 5k\alpha\beta^2\epsilon^2\Delta_n - 5k\alpha\beta^3\epsilon^2\Delta_n + 8k\alpha\epsilon^3\Delta_n - 8k\alpha\beta\epsilon^3\Delta_n - 8k\alpha\beta^2\epsilon^3\Delta_n + \\ & 8k\alpha\beta^3\epsilon^3\Delta_n - 4k\alpha\epsilon^4\Delta_n + 4k\alpha\beta\epsilon^4\Delta_n + 4k\alpha\beta^2\epsilon^4\Delta_n - 4k\alpha\beta^3\epsilon^4\Delta_n \Bigg) + \\ & \sqrt{4 \left(- \left(-3\alpha\Delta + 5k\alpha\Delta - 2k^2\alpha\Delta - k\alpha\beta\Delta + k^2\alpha\beta\Delta + 24\alpha\Delta\epsilon - 36k\alpha\Delta\epsilon + 12k^2\alpha\Delta\epsilon \right. \right. \\ & \left. \left. +$$

[illegible]

$$\begin{aligned}
& \left(24 k \alpha \Delta \epsilon - 8 k^2 \alpha \Delta \epsilon + 48 \alpha \Delta \epsilon^2 - 72 k \alpha \Delta \epsilon^2 + 24 k^2 \alpha \Delta \epsilon^2 - 64 \alpha \Delta \epsilon^3 + \right. \\
& \left. 96 k \alpha \Delta \epsilon^3 - 32 k^2 \alpha \Delta \epsilon^3 + 32 \alpha \Delta \epsilon^4 - 48 k \alpha \Delta \epsilon^4 + 16 k^2 \alpha \Delta \epsilon^4 \right)^2 \\
& \left(\beta + 2 \beta^2 + \beta^3 + k \alpha \beta \Delta + 2 \epsilon + 2 \beta \epsilon - 2 \beta^2 \epsilon - 2 \beta^3 \epsilon - 5 k \alpha \beta \Delta \epsilon + \right. \\
& 2 k \alpha \beta^2 \Delta \epsilon - k \alpha \beta^3 \Delta \epsilon - 2 \epsilon^2 - 2 \beta \epsilon^2 + 2 \beta^2 \epsilon^2 + 2 \beta^3 \epsilon^2 + 9 k \alpha \beta \Delta \epsilon^2 - \\
& 10 k \alpha \beta^2 \Delta \epsilon^2 + 5 k \alpha \beta^3 \Delta \epsilon^2 - 8 k \alpha \beta \Delta \epsilon^3 + 16 k \alpha \beta^2 \Delta \epsilon^3 - 8 k \alpha \beta^3 \Delta \epsilon^3 + \\
& 4 k \alpha \beta \Delta \epsilon^4 - 8 k \alpha \beta^2 \Delta \epsilon^4 + 4 k \alpha \beta^3 \Delta \epsilon^4 + k \alpha \beta \Delta_1 + k \alpha \beta^2 \Delta_1 - 4 k \alpha \beta \epsilon \Delta_1 - \\
& 4 k \alpha \beta^2 \epsilon \Delta_1 + 4 k \alpha \beta \epsilon^2 \Delta_1 + 4 k \alpha \beta^2 \epsilon^2 \Delta_1 + k \alpha \epsilon \Delta_n - k \alpha \beta \epsilon \Delta_n - \\
& k \alpha \beta^2 \epsilon \Delta_n + k \alpha \beta^3 \epsilon \Delta_n - 5 k \alpha \epsilon^2 \Delta_n + 5 k \alpha \beta \epsilon^2 \Delta_n + 5 k \alpha \beta^2 \epsilon^2 \Delta_n - \\
& 5 k \alpha \beta^3 \epsilon^2 \Delta_n + 8 k \alpha \epsilon^3 \Delta_n - 8 k \alpha \beta \epsilon^3 \Delta_n - 8 k \alpha \beta^2 \epsilon^3 \Delta_n + 8 k \alpha \beta^3 \epsilon^3 \Delta_n - \\
& \left. 4 k \alpha \epsilon^4 \Delta_n + 4 k \alpha \beta \epsilon^4 \Delta_n + 4 k \alpha \beta^2 \epsilon^4 \Delta_n - 4 k \alpha \beta^3 \epsilon^4 \Delta_n \right) \Big)^{1/3} \Big)^2 \Big)^{1/3} + \\
& \left(-2 \left(-3 \alpha \Delta + 5 k \alpha \Delta - 2 k^2 \alpha \Delta - k \alpha \beta \Delta + k^2 \alpha \beta \Delta + 24 \alpha \Delta \epsilon - 36 k \alpha \Delta \epsilon + 12 k^2 \alpha \Delta \epsilon + \right. \right. \\
& 12 k \alpha \beta \Delta \epsilon - 12 k^2 \alpha \beta \Delta \epsilon - 72 \alpha \Delta \epsilon^2 + 100 k \alpha \Delta \epsilon^2 - 28 k^2 \alpha \Delta \epsilon^2 - \\
& 44 k \alpha \beta \Delta \epsilon^2 + 44 k^2 \alpha \beta \Delta \epsilon^2 + 96 \alpha \Delta \epsilon^3 - 128 k \alpha \Delta \epsilon^3 + 32 k^2 \alpha \Delta \epsilon^3 + \\
& 64 k \alpha \beta \Delta \epsilon^3 - 64 k^2 \alpha \beta \Delta \epsilon^3 - 48 \alpha \Delta \epsilon^4 + 64 k \alpha \Delta \epsilon^4 - 16 k^2 \alpha \Delta \epsilon^4 - \\
& 32 k \alpha \beta \Delta \epsilon^4 + 32 k^2 \alpha \beta \Delta \epsilon^4 + k \alpha \Delta_1 - k^2 \alpha \Delta_1 + k \alpha \beta \Delta_1 - k^2 \alpha \beta \Delta_1 - \\
& 4 k \alpha \epsilon \Delta_1 + 4 k^2 \alpha \epsilon \Delta_1 - 4 k \alpha \beta \epsilon \Delta_1 + 4 k^2 \alpha \beta \epsilon \Delta_1 + 4 k \alpha \epsilon^2 \Delta_1 - \\
& 4 k^2 \alpha \epsilon^2 \Delta_1 + 4 k \alpha \beta \epsilon^2 \Delta_1 - 4 k^2 \alpha \beta \epsilon^2 \Delta_1 - 4 k \alpha \epsilon \Delta_n + 4 k^2 \alpha \epsilon \Delta_n - \\
& 4 k \alpha \beta \epsilon \Delta_n + 4 k^2 \alpha \beta \epsilon \Delta_n + 20 k \alpha \epsilon^2 \Delta_n - 20 k^2 \alpha \epsilon^2 \Delta_n + 20 k \alpha \beta \epsilon^2 \Delta_n - \\
& 20 k^2 \alpha \beta \epsilon^2 \Delta_n - 32 k \alpha \epsilon^3 \Delta_n + 32 k^2 \alpha \epsilon^3 \Delta_n - 32 k \alpha \beta \epsilon^3 \Delta_n + 32 k^2 \alpha \beta \epsilon^3 \Delta_n + \\
& \left. 16 k \alpha \epsilon^4 \Delta_n - 16 k^2 \alpha \epsilon^4 \Delta_n + 16 k \alpha \beta \epsilon^4 \Delta_n - 16 k^2 \alpha \beta \epsilon^4 \Delta_n \right)^3 + \\
& 9 \left(2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \epsilon + 24 k \alpha \Delta \epsilon - 8 k^2 \alpha \Delta \epsilon + 48 \alpha \Delta \epsilon^2 - \right. \\
& 72 k \alpha \Delta \epsilon^2 + 24 k^2 \alpha \Delta \epsilon^2 - 64 \alpha \Delta \epsilon^3 + 96 k \alpha \Delta \epsilon^3 - \\
& \left. 32 k^2 \alpha \Delta \epsilon^3 + 32 \alpha \Delta \epsilon^4 - 48 k \alpha \Delta \epsilon^4 + 16 k^2 \alpha \Delta \epsilon^4 \right) \\
& \left(-3 \alpha \Delta + 5 k \alpha \Delta - 2 k^2 \alpha \Delta - k \alpha \beta \Delta + k^2 \alpha \beta \Delta + 24 \alpha \Delta \epsilon - 36 k \alpha \Delta \epsilon + \right. \\
& 12 k^2 \alpha \Delta \epsilon + 12 k \alpha \beta \Delta \epsilon - 12 k^2 \alpha \beta \Delta \epsilon - 72 \alpha \Delta \epsilon^2 + \\
& 100 k \alpha \Delta \epsilon^2 - 28 k^2 \alpha \Delta \epsilon^2 - 44 k \alpha \beta \Delta \epsilon^2 + 44 k^2 \alpha \beta \Delta \epsilon^2 + \\
& 96 \alpha \Delta \epsilon^3 - 128 k \alpha \Delta \epsilon^3 + 32 k^2 \alpha \Delta \epsilon^3 + 64 k \alpha \beta \Delta \epsilon^3 - \\
& 64 k^2 \alpha \beta \Delta \epsilon^3 - 48 \alpha \Delta \epsilon^4 + 64 k \alpha \Delta \epsilon^4 - 16 k^2 \alpha \Delta \epsilon^4 - \\
& 32 k \alpha \beta \Delta \epsilon^4 + 32 k^2 \alpha \beta \Delta \epsilon^4 + k \alpha \Delta_1 - k^2 \alpha \Delta_1 + k \alpha \beta \Delta_1 - \\
& k^2 \alpha \beta \Delta_1 - 4 k \alpha \epsilon \Delta_1 + 4 k^2 \alpha \epsilon \Delta_1 - 4 k \alpha \beta \epsilon \Delta_1 + 4 k^2 \alpha \beta \epsilon \Delta_1 + \\
& 4 k \alpha \epsilon^2 \Delta_1 - 4 k^2 \alpha \epsilon^2 \Delta_1 + 4 k \alpha \beta \epsilon^2 \Delta_1 - 4 k^2 \alpha \beta \epsilon^2 \Delta_1 - \\
& 4 k \alpha \epsilon \Delta_n + 4 k^2 \alpha \epsilon \Delta_n - 4 k \alpha \beta \epsilon \Delta_n + 4 k^2 \alpha \beta \epsilon \Delta_n + \\
& 20 k \alpha \epsilon^2 \Delta_n - 20 k^2 \alpha \epsilon^2 \Delta_n + 20 k \alpha \beta \epsilon^2 \Delta_n - 20 k^2 \alpha \beta \epsilon^2 \Delta_n - \\
& 32 k \alpha \epsilon^3 \Delta_n + 32 k^2 \alpha \epsilon^3 \Delta_n - 32 k \alpha \beta \epsilon^3 \Delta_n + 32 k^2 \alpha \beta \epsilon^3 \Delta_n + \\
& \left. 16 k \alpha \epsilon^4 \Delta_n - 16 k^2 \alpha \epsilon^4 \Delta_n + 16 k \alpha \beta \epsilon^4 \Delta_n - 16 k^2 \alpha \beta \epsilon^4 \Delta_n \right) \\
& \left(-k \beta - 2 k \beta^2 - k \beta^3 + \alpha \Delta - 2 k \alpha \Delta + k^2 \alpha \Delta + k \alpha \beta \Delta - 2 k^2 \alpha \beta \Delta - 4 k \epsilon - \right. \\
& 8 k \beta \epsilon - 4 k \beta^2 \epsilon - 8 \alpha \Delta \epsilon + 12 k \alpha \Delta \epsilon - 5 k^2 \alpha \Delta \epsilon - \\
& 12 k \alpha \beta \Delta \epsilon + 14 k^2 \alpha \beta \Delta \epsilon - 5 k^2 \alpha \beta^2 \Delta \epsilon + 4 k \epsilon^2 + \\
& 8 k \beta \epsilon^2 + 4 k \beta^2 \epsilon^2 + 24 \alpha \Delta \epsilon^2 - 28 k \alpha \Delta \epsilon^2 + 9 k^2 \alpha \Delta \epsilon^2 + \\
& 44 k \alpha \beta \Delta \epsilon^2 - 38 k^2 \alpha \beta \Delta \epsilon^2 + 25 k^2 \alpha \beta^2 \Delta \epsilon^2 - 32 \alpha \Delta \epsilon^3 + \\
& 32 k \alpha \Delta \epsilon^3 - 8 k^2 \alpha \Delta \epsilon^3 - 64 k \alpha \beta \Delta \epsilon^3 + 48 k^2 \alpha \beta \Delta \epsilon^3 - \\
& 40 k^2 \alpha \beta^2 \Delta \epsilon^3 + 16 \alpha \Delta \epsilon^4 - 16 k \alpha \Delta \epsilon^4 + 4 k^2 \alpha \Delta \epsilon^4 + \\
& 32 k \alpha \beta \Delta \epsilon^4 - 24 k^2 \alpha \beta \Delta \epsilon^4 + 20 k^2 \alpha \beta^2 \Delta \epsilon^4 - k \alpha \Delta_1 + \\
& k^2 \alpha \Delta_1 - k \alpha \beta \Delta_1 - k^2 \alpha \beta^2 \Delta_1 + 4 k \alpha \epsilon \Delta_1 - 4 k^2 \alpha \epsilon \Delta_1 + \\
& 4 k \alpha \beta \epsilon \Delta_1 + 4 k^2 \alpha \beta^2 \epsilon \Delta_1 - 4 k \alpha \epsilon^2 \Delta_1 + 4 k^2 \alpha \epsilon^2 \Delta_1 - \\
& 4 k \alpha \beta \epsilon^2 \Delta_1 - 4 k^2 \alpha \beta^2 \epsilon^2 \Delta_1 + 4 k \alpha \epsilon \Delta_n - 4 k^2 \alpha \epsilon \Delta_n + \\
& 4 k \alpha \beta \epsilon \Delta_n + 4 k^2 \alpha \beta^2 \epsilon \Delta_n - 20 k \alpha \epsilon^2 \Delta_n + 20 k^2 \alpha \epsilon^2 \Delta_n - \\
& 20 k \alpha \beta \epsilon^2 \Delta_n - 20 k^2 \alpha \beta^2 \epsilon^2 \Delta_n + 32 k \alpha \epsilon^3 \Delta_n - \\
& 32 k^2 \alpha \epsilon^3 \Delta_n + 32 k \alpha \beta \epsilon^3 \Delta_n + 32 k^2 \alpha \beta^2 \epsilon^3 \Delta_n - 16 k \alpha \epsilon^4 \Delta_n + \\
& \left. 16 k^2 \alpha \epsilon^4 \Delta_n - 16 k \alpha \beta \epsilon^4 \Delta_n - 16 k^2 \alpha \beta^2 \epsilon^4 \Delta_n \right) - \\
& 27 k \left(2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \epsilon + 24 k \alpha \Delta \epsilon - 8 k^2 \alpha \Delta \epsilon + 48 \alpha \Delta \epsilon^2 - \right. \\
& 72 k \alpha \Delta \epsilon^2 + 24 k^2 \alpha \Delta \epsilon^2 - 64 \alpha \Delta \epsilon^3 + 96 k \alpha \Delta \epsilon^3 - \\
& \left. 32 k^2 \alpha \Delta \epsilon^3 + 32 \alpha \Delta \epsilon^4 - 48 k \alpha \Delta \epsilon^4 + 16 k^2 \alpha \Delta \epsilon^4 \right)^2
\end{aligned}$$

$$\begin{aligned}
& (\beta + 2\beta^2 + \beta^3 + k\alpha\beta\Delta + 2\epsilon + 2\beta\epsilon - 2\beta^2\epsilon - 2\beta^3\epsilon - 5k\alpha\beta\Delta\epsilon + 2k\alpha\beta^2\Delta\epsilon - \\
& k\alpha\beta^3\Delta\epsilon - 2\epsilon^2 - 2\beta\epsilon^2 + 2\beta^2\epsilon^2 + 2\beta^3\epsilon^2 + 9k\alpha\beta\Delta\epsilon^2 - \\
& 10k\alpha\beta^2\Delta\epsilon^2 + 5k\alpha\beta^3\Delta\epsilon^2 - 8k\alpha\beta\Delta\epsilon^3 + 16k\alpha\beta^2\Delta\epsilon^3 - \\
& 8k\alpha\beta^3\Delta\epsilon^3 + 4k\alpha\beta\Delta\epsilon^4 - 8k\alpha\beta^2\Delta\epsilon^4 + 4k\alpha\beta^3\Delta\epsilon^4 + \\
& k\alpha\beta\Delta_1 + k\alpha\beta^2\Delta_1 - 4k\alpha\beta\epsilon\Delta_1 - 4k\alpha\beta^2\epsilon\Delta_1 + 4k\alpha\beta\epsilon^2\Delta_1 + \\
& 4k\alpha\beta^2\epsilon^2\Delta_1 + k\alpha\epsilon\Delta_n - k\alpha\beta\epsilon\Delta_n - k\alpha\beta^2\epsilon\Delta_n + k\alpha\beta^3\epsilon\Delta_n - \\
& 5k\alpha\epsilon^2\Delta_n + 5k\alpha\beta\epsilon^2\Delta_n + 5k\alpha\beta^2\epsilon^2\Delta_n - 5k\alpha\beta^3\epsilon^2\Delta_n + \\
& 8k\alpha\epsilon^3\Delta_n - 8k\alpha\beta\epsilon^3\Delta_n - 8k\alpha\beta^2\epsilon^3\Delta_n + 8k\alpha\beta^3\epsilon^3\Delta_n - \\
& 4k\alpha\epsilon^4\Delta_n + 4k\alpha\beta\epsilon^4\Delta_n + 4k\alpha\beta^2\epsilon^4\Delta_n - 4k\alpha\beta^3\epsilon^4\Delta_n) + \\
& \sqrt{4 \left(-(-3\alpha\Delta + 5k\alpha\Delta - 2k^2\alpha\Delta - k\alpha\beta\Delta + k^2\alpha\beta\Delta + 24\alpha\Delta\epsilon - 36k\alpha\Delta\epsilon + \right. \\
& 12k^2\alpha\Delta\epsilon + 12k\alpha\beta\Delta\epsilon - 12k^2\alpha\beta\Delta\epsilon - 72\alpha\Delta\epsilon^2 + 100k\alpha\Delta\epsilon^2 - \\
& 28k^2\alpha\Delta\epsilon^2 - 44k\alpha\beta\Delta\epsilon^2 + 44k^2\alpha\beta\Delta\epsilon^2 + 96\alpha\Delta\epsilon^3 - 128k\alpha\Delta\epsilon^3 + \\
& 32k^2\alpha\Delta\epsilon^3 + 64k\alpha\beta\Delta\epsilon^3 - 64k^2\alpha\beta\Delta\epsilon^3 - 48\alpha\Delta\epsilon^4 + 64k\alpha\Delta\epsilon^4 - \\
& 16k^2\alpha\Delta\epsilon^4 - 32k\alpha\beta\Delta\epsilon^4 + 32k^2\alpha\beta\Delta\epsilon^4 + k\alpha\Delta_1 - k^2\alpha\Delta_1 + k\alpha\beta\Delta_1 - \\
& k^2\alpha\beta\Delta_1 - 4k\alpha\epsilon\Delta_1 + 4k^2\alpha\epsilon\Delta_1 - 4k\alpha\beta\epsilon\Delta_1 + 4k^2\alpha\beta\epsilon\Delta_1 + 4k\alpha\epsilon^2\Delta_1 - \\
& 4k^2\alpha\epsilon^2\Delta_1 + 4k\alpha\beta\epsilon^2\Delta_1 - 4k^2\alpha\beta\epsilon^2\Delta_1 - 4k\alpha\epsilon\Delta_n + 4k^2\alpha\epsilon\Delta_n - \\
& 4k\alpha\beta\epsilon\Delta_n + 4k^2\alpha\beta\epsilon\Delta_n + 20k\alpha\epsilon^2\Delta_n - 20k^2\alpha\epsilon^2\Delta_n + 20k\alpha\beta\epsilon^2\Delta_n - \\
& 20k^2\alpha\beta\epsilon^2\Delta_n - 32k\alpha\epsilon^3\Delta_n + 32k^2\alpha\epsilon^3\Delta_n - 32k\alpha\beta\epsilon^3\Delta_n + 32k^2\alpha\beta\epsilon^3\Delta_n + \\
& 16k\alpha\epsilon^4\Delta_n - 16k^2\alpha\epsilon^4\Delta_n + 16k\alpha\beta\epsilon^4\Delta_n - 16k^2\alpha\beta\epsilon^4\Delta_n) \left. \right)^2 + \\
& 3 \left(2\alpha\Delta - 3k\alpha\Delta + k^2\alpha\Delta - 16\alpha\Delta\epsilon + 24k\alpha\Delta\epsilon - 8k^2\alpha\Delta\epsilon + 48\alpha\Delta\epsilon^2 - \right. \\
& 72k\alpha\Delta\epsilon^2 + 24k^2\alpha\Delta\epsilon^2 - 64\alpha\Delta\epsilon^3 + 96k\alpha\Delta\epsilon^3 - 32k^2\alpha\Delta\epsilon^3 + 32\alpha\Delta\epsilon^4 - \\
& 48k\alpha\Delta\epsilon^4 + 16k^2\alpha\Delta\epsilon^4) \left(-k\beta - 2k\beta^2 - k\beta^3 + \alpha\Delta - 2k\alpha\Delta + k^2\alpha\Delta + \right. \\
& k\alpha\beta\Delta - 2k^2\alpha\beta\Delta - 4k\epsilon - 8k\beta\epsilon - 4k\beta^2\epsilon - 8\alpha\Delta\epsilon + 12k\alpha\Delta\epsilon - \\
& 5k^2\alpha\Delta\epsilon - 12k\alpha\beta\Delta\epsilon + 14k^2\alpha\beta\Delta\epsilon - 5k^2\alpha\beta^2\Delta\epsilon + 4k\epsilon^2 + 8k\beta\epsilon^2 + \\
& 4k\beta^2\epsilon^2 + 24\alpha\Delta\epsilon^2 - 28k\alpha\Delta\epsilon^2 + 9k^2\alpha\Delta\epsilon^2 + 44k\alpha\beta\Delta\epsilon^2 - 38k^2\alpha\beta\Delta\epsilon^2 + \\
& 25k^2\alpha\beta^2\Delta\epsilon^2 - 32\alpha\Delta\epsilon^3 + 32k\alpha\Delta\epsilon^3 - 8k^2\alpha\Delta\epsilon^3 - 64k\alpha\beta\Delta\epsilon^3 + \\
& 48k^2\alpha\beta\Delta\epsilon^3 - 40k^2\alpha\beta^2\Delta\epsilon^3 + 16\alpha\Delta\epsilon^4 - 16k\alpha\Delta\epsilon^4 + 4k^2\alpha\Delta\epsilon^4 + \\
& 32k\alpha\beta\Delta\epsilon^4 - 24k^2\alpha\beta\Delta\epsilon^4 + 20k^2\alpha\beta^2\Delta\epsilon^4 - k\alpha\Delta_1 + k^2\alpha\Delta_1 - k\alpha\beta\Delta_1 - \\
& k^2\alpha\beta\Delta_1 + 4k\alpha\epsilon\Delta_1 - 4k^2\alpha\epsilon\Delta_1 + 4k\alpha\beta\epsilon\Delta_1 + 4k^2\alpha\beta\epsilon\Delta_1 - 4k\alpha\epsilon^2\Delta_1 + \\
& 4k^2\alpha\epsilon^2\Delta_1 - 4k\alpha\beta\epsilon^2\Delta_1 - 4k^2\alpha\beta\epsilon^2\Delta_1 + 4k\alpha\epsilon\Delta_n - 4k^2\alpha\epsilon\Delta_n + \\
& 4k\alpha\beta\epsilon\Delta_n + 4k^2\alpha\beta\epsilon\Delta_n - 20k\alpha\epsilon^2\Delta_n + 20k^2\alpha\epsilon^2\Delta_n - 20k\alpha\beta\epsilon^2\Delta_n - \\
& 20k^2\alpha\beta\epsilon^2\Delta_n + 32k\alpha\epsilon^3\Delta_n - 32k^2\alpha\epsilon^3\Delta_n + 32k\alpha\beta\epsilon^3\Delta_n + 32k^2\alpha\beta\epsilon^3\Delta_n - \\
& 16k\alpha\epsilon^4\Delta_n + 16k^2\alpha\epsilon^4\Delta_n - 16k\alpha\beta\epsilon^4\Delta_n - 16k^2\alpha\beta\epsilon^4\Delta_n) \left. \right)^3 + \\
& \left(-2 \left(-3\alpha\Delta + 5k\alpha\Delta - 2k^2\alpha\Delta - k\alpha\beta\Delta + k^2\alpha\beta\Delta + 24\alpha\Delta\epsilon - 36k\alpha\Delta\epsilon + \right. \right. \\
& 12k^2\alpha\Delta\epsilon + 12k\alpha\beta\Delta\epsilon - 12k^2\alpha\beta\Delta\epsilon - 72\alpha\Delta\epsilon^2 + 100k\alpha\Delta\epsilon^2 - \\
& 28k^2\alpha\Delta\epsilon^2 - 44k\alpha\beta\Delta\epsilon^2 + 44k^2\alpha\beta\Delta\epsilon^2 + 96\alpha\Delta\epsilon^3 - 128k\alpha\Delta\epsilon^3 + \\
& 32k^2\alpha\Delta\epsilon^3 + 64k\alpha\beta\Delta\epsilon^3 - 64k^2\alpha\beta\Delta\epsilon^3 - 48\alpha\Delta\epsilon^4 + 64k\alpha\Delta\epsilon^4 - \\
& 16k^2\alpha\Delta\epsilon^4 - 32k\alpha\beta\Delta\epsilon^4 + 32k^2\alpha\beta\Delta\epsilon^4 + k\alpha\Delta_1 - k^2\alpha\Delta_1 + k\alpha\beta\Delta_1 - \\
& k^2\alpha\beta\Delta_1 - 4k\alpha\epsilon\Delta_1 + 4k^2\alpha\epsilon\Delta_1 - 4k\alpha\beta\epsilon\Delta_1 + 4k^2\alpha\beta\epsilon\Delta_1 + 4k\alpha\epsilon^2\Delta_1 - \\
& 4k^2\alpha\epsilon^2\Delta_1 + 4k\alpha\beta\epsilon^2\Delta_1 - 4k^2\alpha\beta\epsilon^2\Delta_1 - 4k\alpha\epsilon\Delta_n + 4k^2\alpha\epsilon\Delta_n - \\
& 4k\alpha\beta\epsilon\Delta_n + 4k^2\alpha\beta\epsilon\Delta_n + 20k\alpha\epsilon^2\Delta_n - 20k^2\alpha\epsilon^2\Delta_n + 20k\alpha\beta\epsilon^2\Delta_n - \\
& 20k^2\alpha\beta\epsilon^2\Delta_n - 32k\alpha\epsilon^3\Delta_n + 32k^2\alpha\epsilon^3\Delta_n - 32k\alpha\beta\epsilon^3\Delta_n + 32k^2\alpha\beta\epsilon^3\Delta_n + \\
& 16k\alpha\epsilon^4\Delta_n - 16k^2\alpha\epsilon^4\Delta_n + 16k\alpha\beta\epsilon^4\Delta_n - 16k^2\alpha\beta\epsilon^4\Delta_n) \left. \right)^3 + \\
& 9 \left(2\alpha\Delta - 3k\alpha\Delta + k^2\alpha\Delta - 16\alpha\Delta\epsilon + 24k\alpha\Delta\epsilon - 8k^2\alpha\Delta\epsilon + 48\alpha\Delta\epsilon^2 - \right. \\
& 72k\alpha\Delta\epsilon^2 + 24k^2\alpha\Delta\epsilon^2 - 64\alpha\Delta\epsilon^3 + 96k\alpha\Delta\epsilon^3 - 32k^2\alpha\Delta\epsilon^3 + 32\alpha\Delta\epsilon^4 - \\
& 48k\alpha\Delta\epsilon^4 + 16k^2\alpha\Delta\epsilon^4) \left(-3\alpha\Delta + 5k\alpha\Delta - 2k^2\alpha\Delta - k\alpha\beta\Delta + k^2\alpha\beta\Delta + \right. \\
& 24\alpha\Delta\epsilon - 36k\alpha\Delta\epsilon + 12k^2\alpha\Delta\epsilon + 12k\alpha\beta\Delta\epsilon - 12k^2\alpha\beta\Delta\epsilon - 72\alpha\Delta\epsilon^2 + \\
& 100k\alpha\Delta\epsilon^2 - 28k^2\alpha\Delta\epsilon^2 - 44k\alpha\beta\Delta\epsilon^2 + 44k^2\alpha\beta\Delta\epsilon^2 + 96\alpha\Delta\epsilon^3 - \\
& 128k\alpha\Delta\epsilon^3 + 32k^2\alpha\Delta\epsilon^3 + 64k\alpha\beta\Delta\epsilon^3 - 64k^2\alpha\beta\Delta\epsilon^3 - 48\alpha\Delta\epsilon^4 + \\
& 64k\alpha\Delta\epsilon^4 - 16k^2\alpha\Delta\epsilon^4 - 32k\alpha\beta\Delta\epsilon^4 + 32k^2\alpha\beta\Delta\epsilon^4 + k\alpha\Delta_1 - k^2\alpha\Delta_1 + \\
& k\alpha\beta\Delta_1 - k^2\alpha\beta\Delta_1 - 4k\alpha\epsilon\Delta_1 + 4k^2\alpha\epsilon\Delta_1 - 4k\alpha\beta\epsilon\Delta_1 + 4k^2\alpha\beta\epsilon\Delta_1 + \\
& 4k\alpha\epsilon^2\Delta_1 - 4k^2\alpha\epsilon^2\Delta_1 + 4k\alpha\beta\epsilon^2\Delta_1 - 4k^2\alpha\beta\epsilon^2\Delta_1 - 4k\alpha\epsilon\Delta_n + \\
& 4k^2\alpha\epsilon\Delta_n - 4k\alpha\beta\epsilon\Delta_n + 4k^2\alpha\beta\epsilon\Delta_n + 20k\alpha\epsilon^2\Delta_n - 20k^2\alpha\epsilon^2\Delta_n + \\
& \left. \left. \right) \right)
\end{aligned}$$

$$\begin{aligned}
& 20 k \alpha \beta \epsilon^2 \Delta_n - 20 k^2 \alpha \beta \epsilon^2 \Delta_n - 32 k \alpha \epsilon^3 \Delta_n + 32 k^2 \alpha \epsilon^3 \Delta_n - 32 k \alpha \beta \epsilon^3 \Delta_n + \\
& 32 k^2 \alpha \beta \epsilon^3 \Delta_n + 16 k \alpha \epsilon^4 \Delta_n - 16 k^2 \alpha \epsilon^4 \Delta_n + 16 k \alpha \beta \epsilon^4 \Delta_n - 16 k^2 \alpha \beta \epsilon^4 \Delta_n) \\
& (-k \beta - 2 k \beta^2 - k \beta^3 + \alpha \Delta - 2 k \alpha \Delta + k^2 \alpha \Delta + k \alpha \beta \Delta - 2 k^2 \alpha \beta \Delta - \\
& 4 k \epsilon - 8 k \beta \epsilon - 4 k \beta^2 \epsilon - 8 \alpha \Delta \epsilon + 12 k \alpha \Delta \epsilon - 5 k^2 \alpha \Delta \epsilon - 12 k \alpha \beta \Delta \epsilon + \\
& 14 k^2 \alpha \beta \Delta \epsilon - 5 k^2 \alpha \beta^2 \Delta \epsilon + 4 k \epsilon^2 + 8 k \beta \epsilon^2 + 4 k \beta^2 \epsilon^2 + 24 \alpha \Delta \epsilon^2 - \\
& 28 k \alpha \Delta \epsilon^2 + 9 k^2 \alpha \Delta \epsilon^2 + 44 k \alpha \beta \Delta \epsilon^2 - 38 k^2 \alpha \beta \Delta \epsilon^2 + 25 k^2 \alpha \beta^2 \Delta \epsilon^2 - \\
& 32 \alpha \Delta \epsilon^3 + 32 k \alpha \Delta \epsilon^3 - 8 k^2 \alpha \Delta \epsilon^3 - 64 k \alpha \beta \Delta \epsilon^3 + 48 k^2 \alpha \beta \Delta \epsilon^3 - \\
& 40 k^2 \alpha \beta^2 \Delta \epsilon^3 + 16 \alpha \Delta \epsilon^4 - 16 k \alpha \Delta \epsilon^4 + 4 k^2 \alpha \Delta \epsilon^4 + 32 k \alpha \beta \Delta \epsilon^4 - \\
& 24 k^2 \alpha \beta \Delta \epsilon^4 + 20 k^2 \alpha \beta^2 \Delta \epsilon^4 - k \alpha \Delta_1 + k^2 \alpha \Delta_1 - k \alpha \beta \Delta_1 - k^2 \alpha \beta^2 \Delta_1 + \\
& 4 k \alpha \epsilon \Delta_1 - 4 k^2 \alpha \epsilon \Delta_1 + 4 k \alpha \beta \epsilon \Delta_1 + 4 k^2 \alpha \beta^2 \epsilon \Delta_1 - 4 k \alpha \epsilon^2 \Delta_1 + \\
& 4 k^2 \alpha \epsilon^2 \Delta_1 - 4 k \alpha \beta \epsilon^2 \Delta_1 - 4 k^2 \alpha \beta^2 \epsilon^2 \Delta_1 + 4 k \alpha \epsilon \Delta_n - 4 k^2 \alpha \epsilon \Delta_n + \\
& 4 k \alpha \beta \epsilon \Delta_n + 4 k^2 \alpha \beta^2 \epsilon \Delta_n - 20 k \alpha \epsilon^2 \Delta_n + 20 k^2 \alpha \epsilon^2 \Delta_n - 20 k \alpha \beta \epsilon^2 \Delta_n - \\
& 20 k^2 \alpha \beta^2 \epsilon^2 \Delta_n + 32 k \alpha \epsilon^3 \Delta_n - 32 k^2 \alpha \epsilon^3 \Delta_n + 32 k \alpha \beta \epsilon^3 \Delta_n + 32 k^2 \alpha \beta^2 \epsilon^3 \Delta_n - \\
& 16 k \alpha \epsilon^4 \Delta_n + 16 k^2 \alpha \epsilon^4 \Delta_n - 16 k \alpha \beta \epsilon^4 \Delta_n - 16 k^2 \alpha \beta^2 \epsilon^4 \Delta_n) - \\
& 27 k (2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \epsilon + 24 k \alpha \Delta \epsilon - 8 k^2 \alpha \Delta \epsilon + 48 \alpha \Delta \epsilon^2 - \\
& 72 k \alpha \Delta \epsilon^2 + 24 k^2 \alpha \Delta \epsilon^2 - 64 \alpha \Delta \epsilon^3 + 96 k \alpha \Delta \epsilon^3 - 32 k^2 \alpha \Delta \epsilon^3 + 32 \alpha \Delta \epsilon^4 - \\
& 48 k \alpha \Delta \epsilon^4 + 16 k^2 \alpha \Delta \epsilon^4)^2 (\beta + 2 \beta^2 + \beta^3 + k \alpha \beta \Delta + 2 \epsilon + 2 \beta \epsilon - 2 \beta^2 \epsilon - \\
& 2 \beta^3 \epsilon - 5 k \alpha \beta \Delta \epsilon + 2 k \alpha \beta^2 \Delta \epsilon - k \alpha \beta^3 \Delta \epsilon - 2 \epsilon^2 - 2 \beta \epsilon^2 + 2 \beta^2 \epsilon^2 + 2 \beta^3 \epsilon^2 + \\
& 9 k \alpha \beta \Delta \epsilon^2 - 10 k \alpha \beta^2 \Delta \epsilon^2 + 5 k \alpha \beta^3 \Delta \epsilon^2 - 8 k \alpha \beta \Delta \epsilon^3 + 16 k \alpha \beta^2 \Delta \epsilon^3 - \\
& 8 k \alpha \beta^3 \Delta \epsilon^3 + 4 k \alpha \beta \Delta \epsilon^4 - 8 k \alpha \beta^2 \Delta \epsilon^4 + 4 k \alpha \beta^3 \Delta \epsilon^4 + k \alpha \beta \Delta_1 + k \alpha \beta^2 \Delta_1 - \\
& 4 k \alpha \beta \epsilon \Delta_1 - 4 k \alpha \beta^2 \epsilon \Delta_1 + 4 k \alpha \beta \epsilon^2 \Delta_1 + 4 k \alpha \beta^2 \epsilon^2 \Delta_1 + k \alpha \epsilon \Delta_n - k \alpha \beta \epsilon \Delta_n - \\
& k \alpha \beta^2 \epsilon \Delta_n + k \alpha \beta^3 \epsilon \Delta_n - 5 k \alpha \epsilon^2 \Delta_n + 5 k \alpha \beta \epsilon^2 \Delta_n + 5 k \alpha \beta^2 \epsilon^2 \Delta_n - \\
& 5 k \alpha \beta^3 \epsilon^2 \Delta_n + 8 k \alpha \epsilon^3 \Delta_n - 8 k \alpha \beta \epsilon^3 \Delta_n - 8 k \alpha \beta^2 \epsilon^3 \Delta_n + 8 k \alpha \beta^3 \epsilon^3 \Delta_n - \\
& 4 k \alpha \epsilon^4 \Delta_n + 4 k \alpha \beta \epsilon^4 \Delta_n + 4 k \alpha \beta^2 \epsilon^4 \Delta_n - 4 k \alpha \beta^3 \epsilon^4 \Delta_n) \Big)^2 \Big)^{1/3} / \\
& (3 \times 2^{1/3} (2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \epsilon + 24 k \alpha \Delta \epsilon - 8 k^2 \alpha \Delta \epsilon + \\
& 48 \\
& \alpha \\
& \Delta \\
& \epsilon^2 - 72 \\
& k \\
& \alpha \\
& \Delta \\
& \epsilon^2 + 24 \\
& k^2 \\
& \alpha \\
& \Delta \\
& \epsilon^2 - 64 \\
& \alpha \\
& \Delta \\
& \epsilon^3 + 96 \\
& k \\
& \alpha \\
& \Delta \\
& \epsilon^3 - 32 \\
& k^2 \\
& \alpha \\
& \Delta \\
& \epsilon^3 + 32 \\
& \alpha \\
& \Delta \\
& \epsilon^4 - 48 \\
& k \\
& \alpha \\
& \Delta
\end{aligned}$$

$$\left\{ p_1 \rightarrow - \left(\left(-3 \alpha \Delta + 5 k \alpha \Delta - 2 k^2 \alpha \Delta - k \alpha \beta \Delta + k^2 \alpha \beta \Delta + \right. \right. \right. \\ \left. \left. \left. \epsilon^4 + 16 k^2 \alpha \Delta \epsilon^4 \right) \right) \right\}, \\ 24 \alpha \Delta \epsilon - 36 k \alpha \Delta \epsilon + 12 k^2 \alpha \Delta \epsilon + 12 k \alpha \beta \Delta \epsilon - 12 k^2 \alpha \beta \Delta \epsilon - 72 \alpha \Delta \epsilon^2 + 100 k \alpha \Delta \epsilon^2 - 28 k^2 \alpha \Delta \epsilon^2 - 44 k \alpha \beta \Delta \epsilon^2 + 44 k^2 \alpha \beta \Delta \epsilon^2 + 96 \alpha \Delta \epsilon^3 - 128 k \alpha \Delta \epsilon^3$$

$$\epsilon^3 + 32$$

$$k^2$$

$$\alpha$$

$$\Delta$$

$$\epsilon^3 + 64$$

$$k$$

$$\alpha$$

$$\beta$$

$$\Delta$$

$$\epsilon^3 - 64$$

$$k^2$$

$$\alpha$$

$$\beta \Delta$$

$$\epsilon^3 - 48$$

$$\alpha \Delta$$

$$\epsilon^4 + 64$$

$$k \alpha \Delta$$

$$\epsilon^4 - 16$$

$$k^2 \alpha \Delta$$

$$\epsilon^4 - 32$$

$$k \alpha \beta \Delta$$

$$\epsilon^4 + 32$$

$$k^2 \alpha \beta$$

$$\Delta \epsilon^4 + k$$

$$\alpha \Delta_1 - k^2$$

$$\alpha \Delta_1 + k$$

$$\alpha \beta$$

$$\Delta_1 - k^2 \alpha$$

$$\beta \Delta_1 - 4$$

$$k \alpha \epsilon$$

$$\Delta_1 + 4$$

$$k^2 \alpha \epsilon$$

$$\Delta_1 - 4$$

$$k \alpha \beta \epsilon$$

$$\Delta_1 + 4$$

$$k^2 \alpha \beta \epsilon$$

$$\Delta_1 + 4 k \alpha$$

$$\epsilon^2 \Delta_1 - 4$$

$$k^2 \alpha \epsilon^2$$

$$\Delta_1 + 4 k \alpha$$

$$\beta \epsilon^2 \Delta_1 - 4$$

$$k^2 \alpha \beta \epsilon^2$$

$$\Delta_1 - 4 k \alpha \epsilon$$

$$\Delta_n + 4 k^2 \alpha$$

$$\epsilon \Delta_n - 4 k \alpha$$

$$\beta \epsilon \Delta_n + 4$$

$$k^2 \alpha \beta \epsilon$$

$$\Delta_n + 20 k \alpha$$

$$\epsilon^2 \Delta_n - 20$$

$$k^2 \alpha \epsilon^2$$

$$\Delta_n + 20 k \alpha$$

$$\beta \epsilon^2 \Delta_n - 20$$

$$k^2 \alpha \beta \epsilon^2$$

$$\Delta_n - 32 k \alpha \epsilon^3$$

$$\Delta_n + 32 k^2 \alpha$$

$$\begin{aligned}
& \epsilon^3 \Delta_n - 32 k \alpha \\
& \beta \epsilon^3 \Delta_n + 32 \\
& k^2 \alpha \beta \epsilon^3 \\
& \Delta_n + 16 k \alpha \epsilon^4 \\
& \Delta_n - 16 k^2 \alpha \epsilon^4 \\
& \Delta_n + 16 k \alpha \beta \\
& \epsilon^4 \Delta_n - 16 k^2 \\
& \alpha \beta \epsilon^4 \Delta_n) / \\
& (3 (2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \epsilon + 24 k \alpha \Delta \epsilon - 8 k^2 \alpha \Delta \epsilon + \\
& 48 \alpha \Delta \epsilon^2 - 72 k \alpha \Delta \epsilon^2 + 24 k^2 \alpha \Delta \epsilon^2 - \\
& 64 \alpha \Delta \epsilon^3 + 96 k \alpha \Delta \epsilon^3 - 32 k^2 \alpha \Delta \epsilon^3 + \\
& 32 \alpha \Delta \epsilon^4 - 48 k \alpha \Delta \epsilon^4 + 16 k^2 \alpha \Delta \epsilon^4)) + \\
& ((1 + i \sqrt{3}) (- (-3 \alpha \Delta + 5 k \alpha \Delta - 2 k^2 \alpha \Delta - k \alpha \beta \Delta + k^2 \alpha \beta \Delta + 24 \alpha \Delta \epsilon - 36 k \alpha \Delta \epsilon + \\
& 12 k^2 \alpha \Delta \epsilon + 12 k \alpha \beta \Delta \epsilon - 12 k^2 \alpha \beta \Delta \epsilon - 72 \alpha \Delta \epsilon^2 + 100 k \alpha \Delta \epsilon^2 - \\
& 28 k^2 \alpha \Delta \epsilon^2 - 44 k \alpha \beta \Delta \epsilon^2 + 44 k^2 \alpha \beta \Delta \epsilon^2 + 96 \alpha \Delta \epsilon^3 - 128 k \alpha \Delta \epsilon^3 + \\
& 32 k^2 \alpha \Delta \epsilon^3 + 64 k \alpha \beta \Delta \epsilon^3 - 64 k^2 \alpha \beta \Delta \epsilon^3 - 48 \alpha \Delta \epsilon^4 + 64 k \alpha \Delta \epsilon^4 - \\
& 16 k^2 \alpha \Delta \epsilon^4 - 32 k \alpha \beta \Delta \epsilon^4 + 32 k^2 \alpha \beta \Delta \epsilon^4 + k \alpha \Delta_1 - k^2 \alpha \Delta_1 + k \alpha \beta \Delta_1 - \\
& k^2 \alpha \beta \Delta_1 - 4 k \alpha \epsilon \Delta_1 + 4 k^2 \alpha \epsilon \Delta_1 - 4 k \alpha \beta \epsilon \Delta_1 + 4 k^2 \alpha \beta \epsilon \Delta_1 + 4 k \alpha \epsilon^2 \Delta_1 - \\
& 4 k^2 \alpha \epsilon^2 \Delta_1 + 4 k \alpha \beta \epsilon^2 \Delta_1 - 4 k^2 \alpha \beta \epsilon^2 \Delta_1 - 4 k \alpha \epsilon \Delta_n + 4 k^2 \alpha \epsilon \Delta_n - \\
& 4 k \alpha \beta \epsilon \Delta_n + 4 k^2 \alpha \beta \epsilon \Delta_n + 20 k \alpha \epsilon^2 \Delta_n - 20 k^2 \alpha \epsilon^2 \Delta_n + 20 k \alpha \beta \epsilon^2 \Delta_n - \\
& 20 k^2 \alpha \beta \epsilon^2 \Delta_n - 32 k \alpha \epsilon^3 \Delta_n + 32 k^2 \alpha \epsilon^3 \Delta_n - 32 k \alpha \beta \epsilon^3 \Delta_n + 32 k^2 \alpha \beta \epsilon^3 \Delta_n + \\
& 16 k \alpha \epsilon^4 \Delta_n - 16 k^2 \alpha \epsilon^4 \Delta_n + 16 k \alpha \beta \epsilon^4 \Delta_n - 16 k^2 \alpha \beta \epsilon^4 \Delta_n)^2 + \\
& 3 (2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \epsilon + 24 k \alpha \Delta \epsilon - 8 k^2 \alpha \Delta \epsilon + 48 \alpha \Delta \epsilon^2 - \\
& 72 k \alpha \Delta \epsilon^2 + 24 k^2 \alpha \Delta \epsilon^2 - 64 \alpha \Delta \epsilon^3 + 96 k \alpha \Delta \epsilon^3 - \\
& 32 k^2 \alpha \Delta \epsilon^3 + 32 \alpha \Delta \epsilon^4 - 48 k \alpha \Delta \epsilon^4 + 16 k^2 \alpha \Delta \epsilon^4) \\
& (-k \beta - 2 k \beta^2 - k \beta^3 + \alpha \Delta - 2 k \alpha \Delta + k^2 \alpha \Delta + k \alpha \beta \Delta - 2 k^2 \alpha \beta \Delta - 4 k \epsilon - \\
& 8 k \beta \epsilon - 4 k \beta^2 \epsilon - 8 \alpha \Delta \epsilon + 12 k \alpha \Delta \epsilon - 5 k^2 \alpha \Delta \epsilon - \\
& 12 k \alpha \beta \Delta \epsilon + 14 k^2 \alpha \beta \Delta \epsilon - 5 k^2 \alpha \beta^2 \Delta \epsilon + 4 k \epsilon^2 + \\
& 8 k \beta \epsilon^2 + 4 k \beta^2 \epsilon^2 + 24 \alpha \Delta \epsilon^2 - 28 k \alpha \Delta \epsilon^2 + 9 k^2 \alpha \Delta \epsilon^2 + \\
& 44 k \alpha \beta \Delta \epsilon^2 - 38 k^2 \alpha \beta \Delta \epsilon^2 + 25 k^2 \alpha \beta^2 \Delta \epsilon^2 - 32 \alpha \Delta \epsilon^3 + \\
& 32 k \alpha \Delta \epsilon^3 - 8 k^2 \alpha \Delta \epsilon^3 - 64 k \alpha \beta \Delta \epsilon^3 + 48 k^2 \alpha \beta \Delta \epsilon^3 - \\
& 40 k^2 \alpha \beta^2 \Delta \epsilon^3 + 16 \alpha \Delta \epsilon^4 - 16 k \alpha \Delta \epsilon^4 + 4 k^2 \alpha \Delta \epsilon^4 + \\
& 32 k \alpha \beta \Delta \epsilon^4 - 24 k^2 \alpha \beta \Delta \epsilon^4 + 20 k^2 \alpha \beta^2 \Delta \epsilon^4 - k \alpha \Delta_1 + \\
& k^2 \alpha \Delta_1 - k \alpha \beta \Delta_1 - k^2 \alpha \beta^2 \Delta_1 + 4 k \alpha \epsilon \Delta_1 - 4 k^2 \alpha \epsilon \Delta_1 + \\
& 4 k \alpha \beta \epsilon \Delta_1 + 4 k^2 \alpha \beta^2 \epsilon \Delta_1 - 4 k \alpha \epsilon^2 \Delta_1 + 4 k^2 \alpha \epsilon^2 \Delta_1 - \\
& 4 k \alpha \beta \epsilon^2 \Delta_1 - 4 k^2 \alpha \beta^2 \epsilon^2 \Delta_1 + 4 k \alpha \epsilon \Delta_n - 4 k^2 \alpha \epsilon \Delta_n + \\
& 4 k \alpha \beta \epsilon \Delta_n + 4 k^2 \alpha \beta^2 \epsilon \Delta_n - 20 k \alpha \epsilon^2 \Delta_n + 20 k^2 \alpha \epsilon^2 \Delta_n - \\
& 20 k \alpha \beta \epsilon^2 \Delta_n - 20 k^2 \alpha \beta^2 \epsilon^2 \Delta_n + 32 k \alpha \epsilon^3 \Delta_n - \\
& 32 k^2 \alpha \epsilon^3 \Delta_n + 32 k \alpha \beta \epsilon^3 \Delta_n + 32 k^2 \alpha \beta^2 \epsilon^3 \Delta_n - 16 k \alpha \epsilon^4 \Delta_n + \\
& 16 k^2 \alpha \epsilon^4 \Delta_n - 16 k \alpha \beta \epsilon^4 \Delta_n - 16 k^2 \alpha \beta^2 \epsilon^4 \Delta_n))) / \\
& (3 \times 2^{2/3} (2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \epsilon + 24 k \alpha \Delta \epsilon - \\
& 8 k^2 \alpha \Delta \epsilon + \\
& 48 \alpha \Delta \epsilon^2 - \\
& 72 k \alpha \Delta \epsilon^2 + \\
& 24 k^2 \alpha \Delta \epsilon^2 - \\
& 64 \alpha \Delta \epsilon^3 + \\
& 96 k \alpha \Delta \epsilon^3 - \\
& 32 k^2 \alpha \Delta \epsilon^3 + \\
& 32 \alpha \Delta \epsilon^4 - \\
& 48 k \alpha \Delta \epsilon^4 + \\
& 16 k^2 \alpha \Delta \epsilon^4) \\
& (-2 (-3 \alpha \Delta + 5 k \alpha \Delta - 2 k^2 \alpha \Delta - k \alpha \beta \Delta + k^2 \alpha \beta \Delta + 24 \alpha \Delta \epsilon - 36 k \alpha \Delta \epsilon + 12 k^2 \alpha \Delta \epsilon +
\end{aligned}$$

$$\begin{aligned} & \left(48\alpha^2\Delta\epsilon^2 - 72k\alpha\Delta\epsilon^2 + 24k^2\alpha\Delta\epsilon^2 - 64\alpha\Delta\epsilon^3 + 96k\alpha\Delta\epsilon^3 - 32k^2\alpha\Delta\epsilon^3 + \right. \\ & 32\alpha\Delta\epsilon^4 - 48k\alpha\Delta\epsilon^4 + 16k^2\alpha\Delta\epsilon^4) (-k\beta - 2k\beta^2 - k\beta^3 + \alpha\Delta - 2k\alpha\Delta + \\ & k^2\alpha\Delta + k\alpha\beta\Delta - 2k^2\alpha\beta\Delta - 4k\epsilon - 8k\beta\epsilon - 4k\beta^2\epsilon - 8\alpha\Delta\epsilon + 12k\alpha\Delta\epsilon - \\ & 5k^2\alpha\Delta\epsilon - 12k\alpha\beta\Delta\epsilon + 14k^2\alpha\beta\Delta\epsilon - 5k^2\alpha\beta^2\Delta\epsilon + 4k\epsilon^2 + 8k\beta\epsilon^2 + \\ & 4k\beta^2\epsilon^2 + 24\alpha\Delta\epsilon^2 - 28k\alpha\Delta\epsilon^2 + 9k^2\alpha\Delta\epsilon^2 + 44k\alpha\beta\Delta\epsilon^2 - 38k^2\alpha\beta\Delta\epsilon^2 \\ & \quad \epsilon^2 + 25k^2\alpha\beta^2\Delta\epsilon^2 - 32\alpha\Delta\epsilon^3 + 32k\alpha\Delta\epsilon^3 - 8k^2\alpha\Delta\epsilon^3 - 64k\alpha\beta\Delta\epsilon^3 + \\ & 48k^2\alpha\beta\Delta\epsilon^3 - 40k^2\alpha\beta^2\Delta\epsilon^3 + 16\alpha\Delta\epsilon^4 - 16k\alpha\Delta\epsilon^4 + 4k^2\alpha\Delta\epsilon^4 + \\ & 32k\alpha\beta\Delta\epsilon^4 - 24k^2\alpha\beta\Delta\epsilon^4 + 20k^2\alpha\beta^2\Delta\epsilon^4 - k\alpha\Delta_1 + k^2\alpha\Delta_1 - k\alpha\beta\Delta_1 - \\ & k^2\alpha\beta^2\Delta_1 + 4k\alpha\epsilon\Delta_1 - 4k^2\alpha\epsilon\Delta_1 + 4k\alpha\beta\epsilon\Delta_1 + 4k^2\alpha\beta^2\epsilon\Delta_1 - 4k\alpha\epsilon^2 \\ & \quad \Delta_1 + 4k^2\alpha\epsilon^2\Delta_1 - 4k\alpha\beta\epsilon^2\Delta_1 - 4k^2\alpha\beta^2\epsilon^2\Delta_1 + 4k\alpha\epsilon\Delta_n - 4k^2\alpha\epsilon\Delta_n + \\ & 4k\alpha\beta\epsilon\Delta_n + 4k^2\alpha\beta^2\epsilon\Delta_n - 20k\alpha\epsilon^2\Delta_n + 20k^2\alpha\epsilon^2\Delta_n - 20k\alpha\beta\epsilon^2\Delta_n - \\ & 20k^2\alpha\beta^2\epsilon^2\Delta_n + 32k\alpha\epsilon^3\Delta_n - 32k^2\alpha\epsilon^3\Delta_n + 32k\alpha\beta\epsilon^3\Delta_n + 32k^2\alpha\beta^2 \\ & \quad \epsilon^3\Delta_n - 16k\alpha\epsilon^4\Delta_n + 16k^2\alpha\epsilon^4\Delta_n - 16k\alpha\beta\epsilon^4\Delta_n - 16k^2\alpha\beta^2\epsilon^4\Delta_n)^3 + \\ & (-2(-3\alpha\Delta + 5k\alpha\Delta - 2k^2\alpha\Delta - k\alpha\beta\Delta + k^2\alpha\beta\Delta + 24\alpha\Delta\epsilon - 36k\alpha\Delta\epsilon + \\ & 12k^2\alpha\Delta\epsilon + 12k\alpha\beta\Delta\epsilon - 12k^2\alpha\beta\Delta\epsilon - 72\alpha\Delta\epsilon^2 + 100k\alpha\Delta\epsilon^2 - \\ & 28k^2\alpha\Delta\epsilon^2 - 44k\alpha\beta\Delta\epsilon^2 + 44k^2\alpha\beta\Delta\epsilon^2 + 96\alpha\Delta\epsilon^3 - 128k\alpha\Delta\epsilon^3 + \\ & 32k^2\alpha\Delta\epsilon^3 + 64k\alpha\beta\Delta\epsilon^3 - 64k^2\alpha\beta\Delta\epsilon^3 - 48\alpha\Delta\epsilon^4 + 64k\alpha\Delta\epsilon^4 - \\ & 16k^2\alpha\Delta\epsilon^4 - 32k\alpha\beta\Delta\epsilon^4 + 32k^2\alpha\beta\Delta\epsilon^4 + k\alpha\Delta_1 - k^2\alpha\Delta_1 + k\alpha\beta\Delta_1 - \\ & k^2\alpha\beta^2\Delta_1 - 4k\alpha\epsilon\Delta_1 + 4k^2\alpha\epsilon\Delta_1 - 4k\alpha\beta\epsilon\Delta_1 + 4k^2\alpha\beta\epsilon\Delta_1 + 4k\alpha\epsilon^2 \\ & \quad \Delta_1 - 4k^2\alpha\epsilon^2\Delta_1 + 4k\alpha\beta\epsilon^2\Delta_1 - 4k^2\alpha\beta^2\epsilon^2\Delta_1 - 4k\alpha\epsilon\Delta_n + 4k^2\alpha\epsilon\Delta_n - \\ & 4k\alpha\beta\epsilon\Delta_n + 4k^2\alpha\beta^2\epsilon\Delta_n + 20k\alpha\epsilon^2\Delta_n - 20k^2\alpha\epsilon^2\Delta_n + 20k\alpha\beta\epsilon^2\Delta_n - \\ & 20k^2\alpha\beta^2\epsilon^2\Delta_n - 32k\alpha\epsilon^3\Delta_n + 32k^2\alpha\epsilon^3\Delta_n - 32k\alpha\beta\epsilon^3\Delta_n + 32k^2\alpha\beta \\ & \quad \epsilon^3\Delta_n + 16k\alpha\epsilon^4\Delta_n - 16k^2\alpha\epsilon^4\Delta_n + 16k\alpha\beta\epsilon^4\Delta_n - 16k^2\alpha\beta^2\epsilon^4\Delta_n)^3 + \\ & 9(2\alpha\Delta - 3k\alpha\Delta + k^2\alpha\Delta - 16\alpha\Delta\epsilon + 24k\alpha\Delta\epsilon - 8k^2\alpha\Delta\epsilon + 48\alpha\Delta\epsilon^2 - \\ & 72k\alpha\Delta\epsilon^2 + 24k^2\alpha\Delta\epsilon^2 - 64\alpha\Delta\epsilon^3 + 96k\alpha\Delta\epsilon^3 - 32k^2\alpha\Delta\epsilon^3 + 32\alpha\Delta\epsilon^4 - \\ & 48k\alpha\Delta\epsilon^4 + 16k^2\alpha\Delta\epsilon^4) (-3\alpha\Delta + 5k\alpha\Delta - 2k^2\alpha\Delta - k\alpha\beta\Delta + k^2\alpha\beta\Delta + \\ & 24\alpha\Delta\epsilon - 36k\alpha\Delta\epsilon + 12k^2\alpha\Delta\epsilon + 12k\alpha\beta\Delta\epsilon - 12k^2\alpha\beta\Delta\epsilon - 72\alpha\Delta\epsilon^2 + \\ & 100k\alpha\Delta\epsilon^2 - 28k^2\alpha\Delta\epsilon^2 - 44k\alpha\beta\Delta\epsilon^2 + 44k^2\alpha\beta\Delta\epsilon^2 + 96\alpha\Delta\epsilon^3 - \\ & 128k\alpha\Delta\epsilon^3 + 32k^2\alpha\Delta\epsilon^3 + 64k\alpha\beta\Delta\epsilon^3 - 64k^2\alpha\beta\Delta\epsilon^3 - 48\alpha\Delta\epsilon^4 + \\ & 64k\alpha\Delta\epsilon^4 - 16k^2\alpha\Delta\epsilon^4 - 32k\alpha\beta\Delta\epsilon^4 + 32k^2\alpha\beta\Delta\epsilon^4 + k\alpha\Delta_1 - k^2\alpha\Delta_1 + \\ & k\alpha\beta\Delta_1 - k^2\alpha\beta^2\Delta_1 - 4k\alpha\epsilon\Delta_1 + 4k^2\alpha\epsilon\Delta_1 - 4k\alpha\beta\epsilon\Delta_1 + 4k^2\alpha\beta\epsilon\Delta_1 + \\ & 4k\alpha\epsilon^2\Delta_1 - 4k^2\alpha\epsilon^2\Delta_1 + 4k\alpha\beta\epsilon^2\Delta_1 - 4k^2\alpha\beta^2\epsilon^2\Delta_1 - 4k\alpha\epsilon\Delta_n + \\ & 4k^2\alpha\epsilon\Delta_n - 4k\alpha\beta\epsilon\Delta_n + 4k^2\alpha\beta^2\epsilon\Delta_n + 20k\alpha\epsilon^2\Delta_n - 20k^2\alpha\epsilon^2\Delta_n + 20k\alpha\beta\epsilon^2\Delta_n - \\ & 20k^2\alpha\beta^2\epsilon^2\Delta_n - 32k\alpha\epsilon^3\Delta_n + 32k^2\alpha\epsilon^3\Delta_n - 32k\alpha\beta\epsilon^3\Delta_n + 32k^2\alpha\beta \\ & \quad \epsilon^3\Delta_n + 16k\alpha\epsilon^4\Delta_n - 16k^2\alpha\epsilon^4\Delta_n + 16k\alpha\beta\epsilon^4\Delta_n - 16k^2\alpha\beta^2\epsilon^4\Delta_n) \\ & (-k\beta - 2k\beta^2 - k\beta^3 + \alpha\Delta - 2k\alpha\Delta + k^2\alpha\Delta + k\alpha\beta\Delta - 2k^2\alpha\beta\Delta - 4k\epsilon - \\ & 8k\beta\epsilon - 4k\beta^2\epsilon - 8\alpha\Delta\epsilon + 12k\alpha\Delta\epsilon - 5k^2\alpha\Delta\epsilon - 12k\alpha\beta\Delta\epsilon + 14k^2\alpha\beta \\ & \quad \Delta\epsilon - 5k^2\alpha\beta^2\Delta\epsilon + 4k\epsilon^2 + 8k\beta\epsilon^2 + 4k\beta^2\epsilon^2 + 24\alpha\Delta\epsilon^2 - 28k\alpha\Delta\epsilon^2 + \\ & 9k^2\alpha\Delta\epsilon^2 + 44k\alpha\beta\Delta\epsilon^2 - 38k^2\alpha\beta\Delta\epsilon^2 + 25k^2\alpha\beta^2\Delta\epsilon^2 - 32\alpha\Delta\epsilon^3 + \\ & 32k\alpha\Delta\epsilon^3 - 8k^2\alpha\Delta\epsilon^3 - 64k\alpha\beta\Delta\epsilon^3 + 48k^2\alpha\beta\Delta\epsilon^3 - 40k^2\alpha\beta^2\Delta\epsilon^3 + \\ & 16\alpha\Delta\epsilon^4 - 16k\alpha\Delta\epsilon^4 + 4k^2\alpha\Delta\epsilon^4 + 32k\alpha\beta\Delta\epsilon^4 - 24k^2\alpha\beta\Delta\epsilon^4 + \\ & 20k^2\alpha\beta^2\Delta\epsilon^4 - k\alpha\Delta_1 + k^2\alpha\Delta_1 - k\alpha\beta\Delta_1 - k^2\alpha\beta^2\Delta_1 + 4k\alpha\epsilon\Delta_1 - 4k^2\alpha\epsilon \\ & \quad \Delta_1 + 4k\alpha\beta\epsilon\Delta_1 + 4k^2\alpha\beta^2\epsilon\Delta_1 - 4k\alpha\epsilon^2\Delta_1 + 4k^2\alpha\epsilon^2\Delta_1 - 4k\alpha\beta\epsilon^2\Delta_1 - \\ & 4k^2\alpha\beta^2\epsilon^2\Delta_1 + 4k\alpha\epsilon\Delta_n - 4k^2\alpha\epsilon\Delta_n + 4k\alpha\beta\epsilon\Delta_n + 4k^2\alpha\beta^2\epsilon\Delta_n - \\ & 20k\alpha\epsilon^2\Delta_n + 20k^2\alpha\epsilon^2\Delta_n - 20k\alpha\beta\epsilon^2\Delta_n - 20k^2\alpha\beta^2\epsilon^2\Delta_n + 32k\alpha\epsilon^3\Delta_n - \\ & 32k^2\alpha\epsilon^3\Delta_n + 32k\alpha\beta\epsilon^3\Delta_n + 32k^2\alpha\beta^2\epsilon^3\Delta_n - 16k\alpha\epsilon^4\Delta_n + 16k^2\alpha\epsilon^4\Delta_n - \\ & 16k\alpha\beta\epsilon^4\Delta_n - 16k^2\alpha\beta^2\epsilon^4\Delta_n) - 27k(2\alpha\Delta - 3k\alpha\Delta + k^2\alpha\Delta - 16\alpha\Delta\epsilon + \\ & 24k\alpha\Delta\epsilon - 8k^2\alpha\Delta\epsilon + 48\alpha\Delta\epsilon^2 - 72k\alpha\Delta\epsilon^2 + 24k^2\alpha\Delta\epsilon^2 - 64\alpha\Delta\epsilon^3 + \\ & 96k\alpha\Delta\epsilon^3 - 32k^2\alpha\Delta\epsilon^3 + 32\alpha\Delta\epsilon^4 - 48k\alpha\Delta\epsilon^4 + 16k^2\alpha\Delta\epsilon^4)^2 \\ & (\beta + 2\beta^2 + \beta^3 + k\alpha\beta\Delta + 2\epsilon + 2\beta\epsilon - 2\beta^2\epsilon - 2\beta^3\epsilon - 5k\alpha\beta\Delta\epsilon + \\ & 2k\alpha\beta^2\Delta\epsilon - k\alpha\beta^3\Delta\epsilon - 2\epsilon^2 - 2\beta\epsilon^2 + 2\beta^2\epsilon^2 + 2\beta^3\epsilon^2 + 9k\alpha\beta\Delta\$$

$$\begin{aligned}
& 4 k \alpha \beta^2 \in \Delta_1 + 4 k \alpha \beta \in^2 \Delta_1 + 4 k \alpha \beta^2 \in^2 \Delta_1 + k \alpha \in \Delta_n - k \alpha \beta \in \Delta_n - \\
& k \alpha \beta^2 \in \Delta_n + k \alpha \beta^3 \in \Delta_n - 5 k \alpha \in^2 \Delta_n + 5 k \alpha \beta \in^2 \Delta_n + 5 k \alpha \beta^2 \in^2 \Delta_n - \\
& 5 k \alpha \beta^3 \in^2 \Delta_n + 8 k \alpha \in^3 \Delta_n - 8 k \alpha \beta \in^3 \Delta_n - 8 k \alpha \beta^2 \in^3 \Delta_n + 8 k \alpha \beta^3 \in^3 \Delta_n - \\
& 4 k \alpha \in^4 \Delta_n + 4 k \alpha \beta \in^4 \Delta_n + 4 k \alpha \beta^2 \in^4 \Delta_n - 4 k \alpha \beta^3 \in^4 \Delta_n \Big)^2 \Big)^{1/3} \Big) - \\
& \left((1 - i \sqrt{3}) \left(-2 \left(-3 \alpha \Delta + 5 k \alpha \Delta - 2 k^2 \alpha \Delta - k \alpha \beta \Delta + k^2 \alpha \beta \Delta + 24 \alpha \Delta \in - 36 k \alpha \Delta \in + \right. \right. \right. \\
& 12 k^2 \alpha \Delta \in + 12 k \alpha \beta \Delta \in - 12 k^2 \alpha \beta \Delta \in - 72 \alpha \Delta \in^2 + 100 k \alpha \Delta \in^2 - \\
& 28 k^2 \alpha \Delta \in^2 - 44 k \alpha \beta \Delta \in^2 + 44 k^2 \alpha \beta \Delta \in^2 + 96 \alpha \Delta \in^3 - 128 k \alpha \Delta \in^3 + \\
& 32 k^2 \alpha \Delta \in^3 + 64 k \alpha \beta \Delta \in^3 - 64 k^2 \alpha \beta \Delta \in^3 - 48 \alpha \Delta \in^4 + 64 k \alpha \Delta \in^4 - \\
& 16 k^2 \alpha \Delta \in^4 - 32 k \alpha \beta \Delta \in^4 + 32 k^2 \alpha \beta \Delta \in^4 + k \alpha \Delta_1 - k^2 \alpha \Delta_1 + k \alpha \beta \Delta_1 - \\
& k^2 \alpha \beta \Delta_1 - 4 k \alpha \in \Delta_1 + 4 k^2 \alpha \in \Delta_1 - 4 k \alpha \beta \in \Delta_1 + 4 k^2 \alpha \beta \in \Delta_1 + 4 k \alpha \in^2 \Delta_1 - \\
& 4 k^2 \alpha \in^2 \Delta_1 + 4 k \alpha \beta \in^2 \Delta_1 - 4 k^2 \alpha \beta \in^2 \Delta_1 - 4 k \alpha \in \Delta_n + 4 k^2 \alpha \in \Delta_n - \\
& 4 k \alpha \beta \in \Delta_n + 4 k^2 \alpha \beta \in \Delta_n + 20 k \alpha \in^2 \Delta_n - 20 k^2 \alpha \in^2 \Delta_n + 20 k \alpha \beta \in^2 \Delta_n - \\
& 20 k^2 \alpha \beta \in^2 \Delta_n - 32 k \alpha \in^3 \Delta_n + 32 k^2 \alpha \in^3 \Delta_n - 32 k \alpha \beta \in^3 \Delta_n + 32 k^2 \alpha \beta \in^3 \Delta_n + \\
& 16 k \alpha \in^4 \Delta_n - 16 k^2 \alpha \in^4 \Delta_n + 16 k \alpha \beta \in^4 \Delta_n - 16 k^2 \alpha \beta \in^4 \Delta_n \Big)^3 + \\
& 9 \left(2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \in + 24 k \alpha \Delta \in - 8 k^2 \alpha \Delta \in + 48 \alpha \Delta \in^2 - \right. \\
& 72 k \alpha \Delta \in^2 + 24 k^2 \alpha \Delta \in^2 - 64 \alpha \Delta \in^3 + 96 k \alpha \Delta \in^3 - \\
& 32 k^2 \alpha \Delta \in^3 + 32 \alpha \Delta \in^4 - 48 k \alpha \Delta \in^4 + 16 k^2 \alpha \Delta \in^4 \Big) \\
& \left(-3 \alpha \Delta + 5 k \alpha \Delta - 2 k^2 \alpha \Delta - k \alpha \beta \Delta + k^2 \alpha \beta \Delta + 24 \alpha \Delta \in - 36 k \alpha \Delta \in + \right. \\
& 12 k^2 \alpha \Delta \in + 12 k \alpha \beta \Delta \in - 12 k^2 \alpha \beta \Delta \in - 72 \alpha \Delta \in^2 + 100 k \alpha \Delta \in^2 - \\
& 28 k^2 \alpha \Delta \in^2 - 44 k \alpha \beta \Delta \in^2 + 44 k^2 \alpha \beta \Delta \in^2 + 96 \alpha \Delta \in^3 - 128 k \alpha \Delta \in^3 + \\
& 32 k^2 \alpha \Delta \in^3 + 64 k \alpha \beta \Delta \in^3 - 64 k^2 \alpha \beta \Delta \in^3 - 48 \alpha \Delta \in^4 + 64 k \alpha \Delta \in^4 - \\
& 16 k^2 \alpha \Delta \in^4 - 32 k \alpha \beta \Delta \in^4 + 32 k^2 \alpha \beta \Delta \in^4 + k \alpha \Delta_1 - k^2 \alpha \Delta_1 + k \alpha \beta \Delta_1 - \\
& k^2 \alpha \beta \Delta_1 - 4 k \alpha \in \Delta_1 + 4 k^2 \alpha \in \Delta_1 - 4 k \alpha \beta \in \Delta_1 + 4 k^2 \alpha \beta \in \Delta_1 + \\
& 4 k \alpha \in^2 \Delta_1 - 4 k^2 \alpha \in^2 \Delta_1 + 4 k \alpha \beta \in^2 \Delta_1 - 4 k^2 \alpha \beta \in^2 \Delta_1 - 4 k \alpha \in \Delta_n + \\
& 4 k^2 \alpha \in \Delta_n - 4 k \alpha \beta \in \Delta_n + 4 k^2 \alpha \beta \in \Delta_n + 20 k \alpha \in^2 \Delta_n - 20 k^2 \alpha \in^2 \Delta_n + \\
& 20 k \alpha \beta \in^2 \Delta_n - 20 k^2 \alpha \beta \in^2 \Delta_n - 32 k \alpha \in^3 \Delta_n + 32 k^2 \alpha \in^3 \Delta_n - 32 k \alpha \beta \in^3 \Delta_n + \\
& 32 k^2 \alpha \beta \in^3 \Delta_n + 16 k \alpha \in^4 \Delta_n - 16 k^2 \alpha \in^4 \Delta_n + 16 k \alpha \beta \in^4 \Delta_n - 16 k^2 \alpha \beta \in^4 \Delta_n \Big) \\
& \left(-k \beta - 2 k \beta^2 - k \beta^3 + \alpha \Delta - 2 k \alpha \Delta + k^2 \alpha \Delta + k \alpha \beta \Delta - 2 k^2 \alpha \beta \Delta - 4 k \in - \right. \\
& 8 k \beta \in - 4 k \beta^2 \in - 8 \alpha \Delta \in + 12 k \alpha \Delta \in - 5 k^2 \alpha \Delta \in - 12 k \alpha \beta \Delta \in + \\
& 14 k^2 \alpha \beta \Delta \in - 5 k^2 \alpha \beta^2 \Delta \in + 4 k \in^2 + 8 k \beta \in^2 + 4 k \beta^2 \in^2 + 24 \alpha \Delta \in^2 - \\
& 28 k \alpha \Delta \in^2 + 9 k^2 \alpha \Delta \in^2 + 44 k \alpha \beta \Delta \in^2 - 38 k^2 \alpha \beta \Delta \in^2 + 25 k^2 \alpha \beta^2 \Delta \in^2 - \\
& 32 \alpha \Delta \in^3 + 32 k \alpha \Delta \in^3 - 8 k^2 \alpha \Delta \in^3 - 64 k \alpha \beta \Delta \in^3 + 48 k^2 \alpha \beta \Delta \in^3 - \\
& 40 k^2 \alpha \beta^2 \Delta \in^3 + 16 \alpha \Delta \in^4 - 16 k \alpha \Delta \in^4 + 4 k^2 \alpha \Delta \in^4 + 32 k \alpha \beta \Delta \in^4 - \\
& 24 k^2 \alpha \beta \Delta \in^4 + 20 k^2 \alpha \beta^2 \Delta \in^4 - k \alpha \Delta_1 + k^2 \alpha \Delta_1 - k \alpha \beta \Delta_1 - k^2 \alpha \beta^2 \Delta_1 + \\
& 4 k \alpha \in \Delta_1 - 4 k^2 \alpha \in \Delta_1 + 4 k \alpha \beta \in \Delta_1 + 4 k^2 \alpha \beta^2 \in \Delta_1 - 4 k \alpha \in^2 \Delta_1 + \\
& 4 k^2 \alpha \in^2 \Delta_1 - 4 k \alpha \beta \in^2 \Delta_1 - 4 k^2 \alpha \beta^2 \in^2 \Delta_1 + 4 k \alpha \in \Delta_n - 4 k^2 \alpha \in \Delta_n + \\
& 4 k \alpha \beta \in \Delta_n + 4 k^2 \alpha \beta^2 \in \Delta_n - 20 k \alpha \in^2 \Delta_n + 20 k^2 \alpha \in^2 \Delta_n - 20 k \alpha \beta \in^2 \Delta_n - \\
& 20 k^2 \alpha \beta^2 \in^2 \Delta_n + 32 k \alpha \in^3 \Delta_n - 32 k^2 \alpha \in^3 \Delta_n + 32 k \alpha \beta \in^3 \Delta_n + 32 k^2 \alpha \beta^2 \in^3 \Delta_n - \\
& 16 k \alpha \in^4 \Delta_n + 16 k^2 \alpha \in^4 \Delta_n - 16 k \alpha \beta \in^4 \Delta_n - 16 k^2 \alpha \beta^2 \in^4 \Delta_n \Big) - \\
& 27 k \left(2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \in + 24 k \alpha \Delta \in - 8 k^2 \alpha \Delta \in + 48 \alpha \Delta \in^2 - \right. \\
& 72 k \alpha \Delta \in^2 + 24 k^2 \alpha \Delta \in^2 - 64 \alpha \Delta \in^3 + 96 k \alpha \Delta \in^3 - \\
& 32 k^2 \alpha \Delta \in^3 + 32 \alpha \Delta \in^4 - 48 k \alpha \Delta \in^4 + 16 k^2 \alpha \Delta \in^4 \Big)^2 \\
& \left(\beta + 2 \beta^2 + \beta^3 + k \alpha \beta \Delta + 2 \in + 2 \beta \in - 2 \beta^2 \in - 2 \beta^3 \in - 5 k \alpha \beta \Delta \in + 2 k \alpha \beta^2 \Delta \in - \right. \\
& k \alpha \beta^3 \Delta \in - 2 \in^2 - 2 \beta \in^2 + 2 \beta^2 \in^2 + 2 \beta^3 \in^2 + 9 k \alpha \beta \Delta \in^2 - 10 k \alpha \beta^2 \Delta \in^2 + \\
& 5 k \alpha \beta^3 \Delta \in^2 - 8 k \alpha \beta \Delta \in^3 + 16 k \alpha \beta^2 \Delta \in^3 - 8 k \alpha \beta^3 \Delta \in^3 + 4 k \alpha \beta \Delta \in^4 - \\
& 8 k \alpha \beta^2 \Delta \in^4 + 4 k \alpha \beta^3 \Delta \in^4 + k \alpha \beta \Delta_1 + k \alpha \beta^2 \Delta_1 - 4 k \alpha \beta \in \Delta_1 - \\
& 4 k \alpha \beta^2 \in \Delta_1 + 4 k \alpha \beta \in^2 \Delta_1 + 4 k \alpha \beta^2 \in^2 \Delta_1 + k \alpha \in \Delta_n - k \alpha \beta \in \Delta_n - \\
& k \alpha \beta^2 \in \Delta_n + k \alpha \beta^3 \in \Delta_n - 5 k \alpha \in^2 \Delta_n + 5 k \alpha \beta \in^2 \Delta_n + 5 k \alpha \beta^2 \in^2 \Delta_n - \\
& 5 k \alpha \beta^3 \in^2 \Delta_n + 8 k \alpha \in^3 \Delta_n - 8 k \alpha \beta \in^3 \Delta_n - 8 k \alpha \beta^2 \in^3 \Delta_n + 8 k \alpha \beta^3 \in^3 \Delta_n - \\
& 4 k \alpha \in^4 \Delta_n + 4 k \alpha \beta \in^4 \Delta_n + 4 k \alpha \beta^2 \in^4 \Delta_n - 4 k \alpha \beta^3 \in^4 \Delta_n \Big) + \\
& \sqrt{4 \left(- \left(-3 \alpha \Delta + 5 k \alpha \Delta - 2 k^2 \alpha \Delta - k \alpha \beta \Delta + k^2 \alpha \beta \Delta + 24 \alpha \Delta \in - 36 k \alpha \Delta \in + 12 k^2 \alpha \Delta \right. \right. \right. \\
& \in + 12 k \alpha \beta \Delta \in - 12 k^2 \alpha \beta \Delta \in - 72 \alpha \Delta \in^2 + 100 k \alpha \Delta \in^2 - 28 k^2 \alpha \Delta \in^2 -
\end{aligned}$$

[illegible]

$$\begin{aligned}
& 20 k \alpha \epsilon^2 \Delta_n + 20 k^2 \alpha \epsilon^2 \Delta_n - 20 k \alpha \beta \epsilon^2 \Delta_n - 20 k^2 \alpha \beta^2 \epsilon^2 \Delta_n + 32 k \alpha \epsilon^3 \Delta_n - \\
& 32 k^2 \alpha \epsilon^3 \Delta_n + 32 k \alpha \beta \epsilon^3 \Delta_n + 32 k^2 \alpha \beta^2 \epsilon^3 \Delta_n - 16 k \alpha \epsilon^4 \Delta_n + 16 k^2 \alpha \epsilon^4 \Delta_n - \\
& 16 k \alpha \beta \epsilon^4 \Delta_n - 16 k^2 \alpha \beta^2 \epsilon^4 \Delta_n) - 27 k (2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \epsilon + \\
& 24 k \alpha \Delta \epsilon - 8 k^2 \alpha \Delta \epsilon + 48 \alpha \Delta \epsilon^2 - 72 k \alpha \Delta \epsilon^2 + 24 k^2 \alpha \Delta \epsilon^2 - 64 \alpha \Delta \epsilon^3 + \\
& 96 k \alpha \Delta \epsilon^3 - 32 k^2 \alpha \Delta \epsilon^3 + 32 \alpha \Delta \epsilon^4 - 48 k \alpha \Delta \epsilon^4 + 16 k^2 \alpha \Delta \epsilon^4)^2 \\
& (\beta + 2 \beta^2 + \beta^3 + k \alpha \beta \Delta + 2 \epsilon + 2 \beta \epsilon - 2 \beta^2 \epsilon - 2 \beta^3 \epsilon - 5 k \alpha \beta \Delta \epsilon + \\
& 2 k \alpha \beta^2 \Delta \epsilon - k \alpha \beta^3 \Delta \epsilon - 2 \epsilon^2 - 2 \beta \epsilon^2 + 2 \beta^2 \epsilon^2 + 2 \beta^3 \epsilon^2 + 9 k \alpha \beta \Delta \epsilon^2 - \\
& 10 k \alpha \beta^2 \Delta \epsilon^2 + 5 k \alpha \beta^3 \Delta \epsilon^2 - 8 k \alpha \beta \Delta \epsilon^3 + 16 k \alpha \beta^2 \Delta \epsilon^3 - 8 k \alpha \beta^3 \Delta \epsilon^3 + \\
& 4 k \alpha \beta \Delta \epsilon^4 - 8 k \alpha \beta^2 \Delta \epsilon^4 + 4 k \alpha \beta^3 \Delta \epsilon^4 + k \alpha \beta \Delta_1 + k \alpha \beta^2 \Delta_1 - 4 k \alpha \beta \epsilon \Delta_1 - \\
& 4 k \alpha \beta^2 \epsilon \Delta_1 + 4 k \alpha \beta \epsilon^2 \Delta_1 + 4 k \alpha \beta^2 \epsilon^2 \Delta_1 + k \alpha \epsilon \Delta_n - k \alpha \beta \epsilon \Delta_n - \\
& k \alpha \beta^2 \epsilon \Delta_n + k \alpha \beta^3 \epsilon \Delta_n - 5 k \alpha \epsilon^2 \Delta_n + 5 k \alpha \beta \epsilon^2 \Delta_n + 5 k \alpha \beta^2 \epsilon^2 \Delta_n - \\
& 5 k \alpha \beta^3 \epsilon^2 \Delta_n + 8 k \alpha \epsilon^3 \Delta_n - 8 k \alpha \beta \epsilon^3 \Delta_n - 8 k \alpha \beta^2 \epsilon^3 \Delta_n + 8 k \alpha \beta^3 \epsilon^3 \Delta_n - \\
& 4 k \alpha \epsilon^4 \Delta_n + 4 k \alpha \beta \epsilon^4 \Delta_n + 4 k \alpha \beta^2 \epsilon^4 \Delta_n - 4 k \alpha \beta^3 \epsilon^4 \Delta_n))^2)^{1/3} \Big/ \\
& (6 \times 2^{1/3} (2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \epsilon + 24 k \alpha \Delta \epsilon - 8 k^2 \alpha \Delta \epsilon + \\
& 48 \\
& \alpha \\
& \Delta \\
& \epsilon^2 - 72 \\
& k \\
& \alpha \\
& \Delta \\
& \epsilon^2 + 24 \\
& k^2 \\
& \alpha \\
& \Delta \\
& \epsilon^2 - 64 \\
& \alpha \\
& \Delta \\
& \epsilon^3 + 96 \\
& k \\
& \alpha \\
& \Delta \\
& \epsilon^3 - 32 \\
& k^2 \\
& \alpha \\
& \Delta \\
& \epsilon^3 + 32 \\
& \alpha \\
& \Delta \\
& \epsilon^4 - 48 \\
& k \\
& \alpha \\
& \Delta \\
& \epsilon^4 + 16 \\
& k^2 \\
& \alpha \\
& \Delta \\
& \epsilon^4))^2 \Big/ \\
& \{p_1 \rightarrow - \left((-3 \alpha \Delta + 5 k \alpha \Delta - 2 k^2 \alpha \Delta - k \alpha \beta \Delta + k^2 \alpha \beta \Delta + 24 \right. \\
& \alpha \\
& \Delta \\
& \epsilon - 36 \\
& k \\
& \alpha
\end{aligned}$$

Δ
 $\epsilon + 12$
 k^2
 α
 Δ
 $\epsilon + 12$
 k
 α
 β
 Δ
 $\epsilon - 12$
 k^2
 α
 β
 Δ
 $\epsilon - 72$
 α
 Δ
 $\epsilon^2 + 100$
 k
 α
 Δ
 $\epsilon^2 - 28$
 k^2
 α
 Δ
 $\epsilon^2 - 44$
 k
 α
 β
 Δ
 $\epsilon^2 + 44$
 k^2
 α
 β
 Δ
 $\epsilon^2 + 96$
 α
 Δ
 $\epsilon^3 - 128$
 k
 α
 Δ
 $\epsilon^3 + 32$
 k^2
 α
 Δ
 $\epsilon^3 + 64$
 k
 α
 β
 Δ
 $\epsilon^3 - 64$
 k^2
 α

β Δ $\epsilon^3 - 48$ α Δ $\epsilon^4 + 64$ k α Δ $\epsilon^4 - 16$ k^2 α Δ $\epsilon^4 - 32$ k α β Δ $\epsilon^4 + 32$ k^2 α β Δ $\epsilon^4 + k$ α $\Delta_1 - k^2$ α $\Delta_1 + k$ α β $\Delta_1 - k^2$ α β $\Delta_1 - 4$ k α ϵ $\Delta_1 + 4$ k^2 α ϵ $\Delta_1 - 4$ k α β ϵ $\Delta_1 + 4$ k^2 α β ϵ $\Delta_1 + 4$ k α ϵ^2

$$\Delta_1 - 4$$

$$k^2$$

$$\alpha$$

$$\epsilon^2$$

$$\Delta_1 + 4$$

$$k$$

$$\alpha$$

$$\beta$$

$$\epsilon^2$$

$$\Delta_1 - 4$$

$$k^2$$

$$\alpha$$

$$\beta$$

$$\epsilon^2$$

$$\Delta_1 - 4$$

$$k$$

$$\alpha$$

$$\epsilon$$

$$\Delta_n + 4$$

$$k^2$$

$$\alpha$$

$$\epsilon$$

$$\Delta_n - 4$$

$$k$$

$$\alpha$$

$$\beta$$

$$\epsilon$$

$$\Delta_n + 4$$

$$k^2$$

$$\alpha$$

$$\beta$$

$$\epsilon$$

$$\Delta_n + 20$$

$$k$$

$$\alpha$$

$$\epsilon^2$$

$$\Delta_n - 20$$

$$k^2$$

$$\alpha$$

$$\epsilon^2$$

$$\Delta_n + 20$$

$$k$$

$$\alpha$$

$$\beta$$

$$\epsilon^2$$

$$\Delta_n - 20$$

$$k^2$$

$$\alpha$$

$$\beta$$

$$\epsilon^2$$

$$\Delta_n - 32$$

$$k$$

$$\alpha$$

$$\epsilon^3$$

$$\Delta_n + 32$$

$$\begin{aligned}
& k^2 \\
& \alpha \\
& \epsilon^3 \\
& \Delta_n - 32 \\
& k \\
& \alpha \\
& \beta \\
& \epsilon^3 \\
& \Delta_n + 32 \\
& k^2 \\
& \alpha \\
& \beta \\
& \epsilon^3 \\
& \Delta_n + 16 \\
& k \\
& \alpha \\
& \epsilon^4 \\
& \Delta_n - 16 \\
& k^2 \\
& \alpha \\
& \epsilon^4 \\
& \Delta_n + 16 \\
& k \\
& \alpha \\
& \beta \\
& \epsilon^4 \\
& \Delta_n - 16 \\
& k^2 \\
& \alpha \\
& \beta \\
& \epsilon^4 \\
& \Delta_n) / \\
& (3 (2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \epsilon + 24 k \alpha \Delta \epsilon - 8 k^2 \alpha \Delta \epsilon + \\
& 48 \alpha \Delta \epsilon^2 - 72 k \alpha \Delta \epsilon^2 + 24 k^2 \alpha \Delta \epsilon^2 - \\
& 64 \alpha \Delta \epsilon^3 + 96 k \alpha \Delta \epsilon^3 - 32 k^2 \alpha \Delta \epsilon^3 + \\
& 32 \alpha \Delta \epsilon^4 - 48 k \alpha \Delta \epsilon^4 + 16 k^2 \alpha \Delta \epsilon^4)) + \\
& ((1 - i \sqrt{3}) (-(-3 \alpha \Delta + 5 k \alpha \Delta - 2 k^2 \alpha \Delta - k \alpha \beta \Delta + k^2 \alpha \beta \Delta + 24 \alpha \Delta \epsilon - 36 k \alpha \Delta \epsilon + \\
& 12 k^2 \alpha \Delta \epsilon + 12 k \alpha \beta \Delta \epsilon - 12 k^2 \alpha \beta \Delta \epsilon - 72 \alpha \Delta \epsilon^2 + 100 k \alpha \Delta \epsilon^2 - \\
& 28 k^2 \alpha \Delta \epsilon^2 - 44 k \alpha \beta \Delta \epsilon^2 + 44 k^2 \alpha \beta \Delta \epsilon^2 + 96 \alpha \Delta \epsilon^3 - 128 k \alpha \Delta \epsilon^3 + \\
& 32 k^2 \alpha \Delta \epsilon^3 + 64 k \alpha \beta \Delta \epsilon^3 - 64 k^2 \alpha \beta \Delta \epsilon^3 - 48 \alpha \Delta \epsilon^4 + 64 k \alpha \Delta \epsilon^4 - \\
& 16 k^2 \alpha \Delta \epsilon^4 - 32 k \alpha \beta \Delta \epsilon^4 + 32 k^2 \alpha \beta \Delta \epsilon^4 + k \alpha \Delta_1 - k^2 \alpha \Delta_1 + k \alpha \beta \Delta_1 - \\
& k^2 \alpha \beta \Delta_1 - 4 k \alpha \epsilon \Delta_1 + 4 k^2 \alpha \epsilon \Delta_1 - 4 k \alpha \beta \epsilon \Delta_1 + 4 k^2 \alpha \beta \epsilon \Delta_1 + 4 k \alpha \epsilon^2 \Delta_1 - \\
& 4 k^2 \alpha \epsilon^2 \Delta_1 + 4 k \alpha \beta \epsilon^2 \Delta_1 - 4 k^2 \alpha \beta \epsilon^2 \Delta_1 - 4 k \alpha \epsilon \Delta_n + 4 k^2 \alpha \epsilon \Delta_n - \\
& 4 k \alpha \beta \epsilon \Delta_n + 4 k^2 \alpha \beta \epsilon \Delta_n + 20 k \alpha \epsilon^2 \Delta_n - 20 k^2 \alpha \epsilon^2 \Delta_n + 20 k \alpha \beta \epsilon^2 \Delta_n - \\
& 20 k^2 \alpha \beta \epsilon^2 \Delta_n - 32 k \alpha \epsilon^3 \Delta_n + 32 k^2 \alpha \epsilon^3 \Delta_n - 32 k \alpha \beta \epsilon^3 \Delta_n + 32 k^2 \alpha \beta \epsilon^3 \Delta_n + \\
& 16 k \alpha \epsilon^4 \Delta_n - 16 k^2 \alpha \epsilon^4 \Delta_n + 16 k \alpha \beta \epsilon^4 \Delta_n - 16 k^2 \alpha \beta \epsilon^4 \Delta_n)^2 + \\
& 3 (2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \epsilon + 24 k \alpha \Delta \epsilon - 8 k^2 \alpha \Delta \epsilon + 48 \alpha \Delta \epsilon^2 - \\
& 72 k \alpha \Delta \epsilon^2 + 24 k^2 \alpha \Delta \epsilon^2 - 64 \alpha \Delta \epsilon^3 + 96 k \alpha \Delta \epsilon^3 - \\
& 32 k^2 \alpha \Delta \epsilon^3 + 32 \alpha \Delta \epsilon^4 - 48 k \alpha \Delta \epsilon^4 + 16 k^2 \alpha \Delta \epsilon^4) \\
& (-k \beta - 2 k \beta^2 - k \beta^3 + \alpha \Delta - 2 k \alpha \Delta + k^2 \alpha \Delta + k \alpha \beta \Delta - 2 k^2 \alpha \beta \Delta - 4 k \epsilon - \\
& 8 k \beta \epsilon - 4 k \beta^2 \epsilon - 8 \alpha \Delta \epsilon + 12 k \alpha \Delta \epsilon - 5 k^2 \alpha \Delta \epsilon - \\
& 12 k \alpha \beta \Delta \epsilon + 14 k^2 \alpha \beta \Delta \epsilon - 5 k^2 \alpha \beta^2 \Delta \epsilon + 4 k \epsilon^2 + \\
& 8 k \beta \epsilon^2 + 4 k \beta^2 \epsilon^2 + 24 \alpha \Delta \epsilon^2 - 28 k \alpha \Delta \epsilon^2 + 9 k^2 \alpha \Delta \epsilon^2 + \\
& 44 k \alpha \beta \Delta \epsilon^2 - 38 k^2 \alpha \beta \Delta \epsilon^2 + 25 k^2 \alpha \beta^2 \Delta \epsilon^2 - 32 \alpha \Delta \epsilon^3 +
\end{aligned}$$

$$\begin{aligned}
& 32 k \alpha \Delta \epsilon^3 - 8 k^2 \alpha \Delta \epsilon^3 - 64 k \alpha \beta \Delta \epsilon^3 + 48 k^2 \alpha \beta \Delta \epsilon^3 - \\
& 40 k^2 \alpha \beta^2 \Delta \epsilon^3 + 16 \alpha \Delta \epsilon^4 - 16 k \alpha \Delta \epsilon^4 + 4 k^2 \alpha \Delta \epsilon^4 + \\
& 32 k \alpha \beta \Delta \epsilon^4 - 24 k^2 \alpha \beta \Delta \epsilon^4 + 20 k^2 \alpha \beta^2 \Delta \epsilon^4 - \\
& k \alpha \Delta_1 + k^2 \alpha \Delta_1 - k \alpha \beta \Delta_1 - k^2 \alpha \beta^2 \Delta_1 + 4 k \alpha \epsilon \Delta_1 - \\
& 4 k^2 \alpha \epsilon \Delta_1 + 4 k \alpha \beta \epsilon \Delta_1 + 4 k^2 \alpha \beta^2 \epsilon \Delta_1 - 4 k \alpha \epsilon^2 \Delta_1 + \\
& 4 k^2 \alpha \epsilon^2 \Delta_1 - 4 k \alpha \beta \epsilon^2 \Delta_1 - 4 k^2 \alpha \beta^2 \epsilon^2 \Delta_1 + \\
& 4 k \alpha \epsilon \Delta_n - 4 k^2 \alpha \epsilon \Delta_n + 4 k \alpha \beta \epsilon \Delta_n + 4 k^2 \alpha \beta^2 \epsilon \Delta_n - \\
& 20 k \alpha \epsilon^2 \Delta_n + 20 k^2 \alpha \epsilon^2 \Delta_n - 20 k \alpha \beta \epsilon^2 \Delta_n - \\
& 20 k^2 \alpha \beta^2 \epsilon^2 \Delta_n + 32 k \alpha \epsilon^3 \Delta_n - 32 k^2 \alpha \epsilon^3 \Delta_n + \\
& 32 k \alpha \beta \epsilon^3 \Delta_n + 32 k^2 \alpha \beta^2 \epsilon^3 \Delta_n - 16 k \alpha \epsilon^4 \Delta_n + \\
& 16 k^2 \alpha \epsilon^4 \Delta_n - 16 k \alpha \beta \epsilon^4 \Delta_n - 16 k^2 \alpha \beta^2 \epsilon^4 \Delta_n) \Big) \Big) / \\
& \left(3 \times 2^{2/3} \left(2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \epsilon + 24 k \alpha \Delta \epsilon - \right. \right. \\
& \quad 8 \\
& \quad k^2 \\
& \quad \alpha \\
& \quad \Delta \\
& \quad \epsilon + 48 \\
& \quad \alpha \\
& \quad \Delta \\
& \quad \epsilon^2 - 72 \\
& \quad k \\
& \quad \alpha \\
& \quad \Delta \\
& \quad \epsilon^2 + 24 \\
& \quad k^2 \\
& \quad \alpha \\
& \quad \Delta \\
& \quad \epsilon^2 - 64 \\
& \quad \alpha \\
& \quad \Delta \\
& \quad \epsilon^3 + 96 \\
& \quad k \\
& \quad \alpha \\
& \quad \Delta \\
& \quad \epsilon^3 - 32 \\
& \quad k^2 \\
& \quad \alpha \\
& \quad \Delta \\
& \quad \epsilon^3 + 32 \\
& \quad \alpha \\
& \quad \Delta \\
& \quad \epsilon^4 - 48 \\
& \quad k \\
& \quad \alpha \\
& \quad \Delta \\
& \quad \epsilon^4 + 16 \\
& \quad k^2 \\
& \quad \alpha \\
& \quad \Delta \\
& \quad \epsilon^4) \\
& \left. \left(-2 \left(-3 \alpha \Delta + 5 k \alpha \Delta - 2 k^2 \alpha \Delta - k \alpha \beta \Delta + k^2 \alpha \beta \Delta + 24 \alpha \Delta \epsilon - 36 k \alpha \Delta \epsilon + \right. \right. \right. \\
& \quad 12 k^2 \alpha \Delta \epsilon + 12 k \alpha \beta \Delta \epsilon - 12 k^2 \alpha \beta \Delta \epsilon - 72 \alpha \Delta \epsilon^2 + 100 k \alpha \Delta \epsilon^2 - \\
& \quad \left. \left. 28 k^2 \alpha \Delta \epsilon^2 - 44 k \alpha \beta \Delta \epsilon^2 + 44 k^2 \alpha \beta \Delta \epsilon^2 + 96 \alpha \Delta \epsilon^3 - 128 k \alpha \Delta \epsilon^3 + \right. \right.
\end{aligned}$$

$$\begin{aligned}
& 32 k^2 \alpha \Delta \epsilon^3 + 64 k \alpha \beta \Delta \epsilon^3 - 64 k^2 \alpha \beta \Delta \epsilon^3 - 48 \alpha \Delta \epsilon^4 + 64 k \alpha \Delta \epsilon^4 - \\
& 16 k^2 \alpha \Delta \epsilon^4 - 32 k \alpha \beta \Delta \epsilon^4 + 32 k^2 \alpha \beta \Delta \epsilon^4 + k \alpha \Delta_1 - k^2 \alpha \Delta_1 + k \alpha \beta \Delta_1 - \\
& k^2 \alpha \beta \Delta_1 - 4 k \alpha \epsilon \Delta_1 + 4 k^2 \alpha \epsilon \Delta_1 - 4 k \alpha \beta \epsilon \Delta_1 + 4 k^2 \alpha \beta \epsilon \Delta_1 + 4 k \alpha \epsilon^2 \Delta_1 - \\
& 4 k^2 \alpha \epsilon^2 \Delta_1 + 4 k \alpha \beta \epsilon^2 \Delta_1 - 4 k^2 \alpha \beta \epsilon^2 \Delta_1 - 4 k \alpha \epsilon \Delta_n + 4 k^2 \alpha \epsilon \Delta_n - \\
& 4 k \alpha \beta \epsilon \Delta_n + 4 k^2 \alpha \beta \epsilon \Delta_n + 20 k \alpha \epsilon^2 \Delta_n - 20 k^2 \alpha \epsilon^2 \Delta_n + 20 k \alpha \beta \epsilon^2 \Delta_n - \\
& 20 k^2 \alpha \beta \epsilon^2 \Delta_n - 32 k \alpha \epsilon^3 \Delta_n + 32 k^2 \alpha \epsilon^3 \Delta_n - 32 k \alpha \beta \epsilon^3 \Delta_n + 32 k^2 \alpha \beta \epsilon^3 \Delta_n + \\
& 16 k \alpha \epsilon^4 \Delta_n - 16 k^2 \alpha \epsilon^4 \Delta_n + 16 k \alpha \beta \epsilon^4 \Delta_n - 16 k^2 \alpha \beta \epsilon^4 \Delta_n)^3 + \\
9 & (2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \epsilon + 24 k \alpha \Delta \epsilon - 8 k^2 \alpha \Delta \epsilon + 48 \alpha \Delta \epsilon^2 - \\
& 72 k \alpha \Delta \epsilon^2 + 24 k^2 \alpha \Delta \epsilon^2 - 64 \alpha \Delta \epsilon^3 + 96 k \alpha \Delta \epsilon^3 - \\
& 32 k^2 \alpha \Delta \epsilon^3 + 32 \alpha \Delta \epsilon^4 - 48 k \alpha \Delta \epsilon^4 + 16 k^2 \alpha \Delta \epsilon^4) \\
& (-3 \alpha \Delta + 5 k \alpha \Delta - 2 k^2 \alpha \Delta - k \alpha \beta \Delta + k^2 \alpha \beta \Delta + 24 \alpha \Delta \epsilon - 36 k \alpha \Delta \epsilon + \\
& 12 k^2 \alpha \Delta \epsilon + 12 k \alpha \beta \Delta \epsilon - 12 k^2 \alpha \beta \Delta \epsilon - 72 \alpha \Delta \epsilon^2 + 100 k \alpha \Delta \epsilon^2 - \\
& 28 k^2 \alpha \Delta \epsilon^2 - 44 k \alpha \beta \Delta \epsilon^2 + 44 k^2 \alpha \beta \Delta \epsilon^2 + 96 \alpha \Delta \epsilon^3 - 128 k \alpha \Delta \epsilon^3 + \\
& 32 k^2 \alpha \Delta \epsilon^3 + 64 k \alpha \beta \Delta \epsilon^3 - 64 k^2 \alpha \beta \Delta \epsilon^3 - 48 \alpha \Delta \epsilon^4 + 64 k \alpha \Delta \epsilon^4 - \\
& 16 k^2 \alpha \Delta \epsilon^4 - 32 k \alpha \beta \Delta \epsilon^4 + 32 k^2 \alpha \beta \Delta \epsilon^4 + k \alpha \Delta_1 - k^2 \alpha \Delta_1 + k \alpha \beta \Delta_1 - \\
& k^2 \alpha \beta \Delta_1 - 4 k \alpha \epsilon \Delta_1 + 4 k^2 \alpha \epsilon \Delta_1 - 4 k \alpha \beta \epsilon \Delta_1 + 4 k^2 \alpha \beta \epsilon \Delta_1 + \\
& 4 k \alpha \epsilon^2 \Delta_1 - 4 k^2 \alpha \epsilon^2 \Delta_1 + 4 k \alpha \beta \epsilon^2 \Delta_1 - 4 k^2 \alpha \beta \epsilon^2 \Delta_1 - 4 k \alpha \epsilon \Delta_n + \\
& 4 k^2 \alpha \epsilon \Delta_n - 4 k \alpha \beta \epsilon \Delta_n + 4 k^2 \alpha \beta \epsilon \Delta_n + 20 k \alpha \epsilon^2 \Delta_n - 20 k^2 \alpha \epsilon^2 \Delta_n + \\
& 20 k \alpha \beta \epsilon^2 \Delta_n - 20 k^2 \alpha \beta \epsilon^2 \Delta_n - 32 k \alpha \epsilon^3 \Delta_n + 32 k^2 \alpha \epsilon^3 \Delta_n - 32 k \alpha \beta \epsilon^3 \Delta_n + \\
& 32 k^2 \alpha \beta \epsilon^3 \Delta_n + 16 k \alpha \epsilon^4 \Delta_n - 16 k^2 \alpha \epsilon^4 \Delta_n + 16 k \alpha \beta \epsilon^4 \Delta_n - 16 k^2 \alpha \beta \epsilon^4 \Delta_n) \\
& (-k \beta - 2 k \beta^2 - k \beta^3 + \alpha \Delta - 2 k \alpha \Delta + k^2 \alpha \Delta + k \alpha \beta \Delta - 2 k^2 \alpha \beta \Delta - 4 k \epsilon - \\
& 8 k \beta \epsilon - 4 k \beta^2 \epsilon - 8 \alpha \Delta \epsilon + 12 k \alpha \Delta \epsilon - 5 k^2 \alpha \Delta \epsilon - 12 k \alpha \beta \Delta \epsilon + \\
& 14 k^2 \alpha \beta \Delta \epsilon - 5 k^2 \alpha \beta^2 \Delta \epsilon + 4 k \epsilon^2 + 8 k \beta \epsilon^2 + 4 k \beta^2 \epsilon^2 + 24 \alpha \Delta \epsilon^2 - \\
& 28 k \alpha \Delta \epsilon^2 + 9 k^2 \alpha \Delta \epsilon^2 + 44 k \alpha \beta \Delta \epsilon^2 - 38 k^2 \alpha \beta \Delta \epsilon^2 + 25 k^2 \alpha \beta^2 \Delta \epsilon^2 - \\
& 32 \alpha \Delta \epsilon^3 + 32 k \alpha \Delta \epsilon^3 - 8 k^2 \alpha \Delta \epsilon^3 - 64 k \alpha \beta \Delta \epsilon^3 + 48 k^2 \alpha \beta \Delta \epsilon^3 - \\
& 40 k^2 \alpha \beta^2 \Delta \epsilon^3 + 16 \alpha \Delta \epsilon^4 - 16 k \alpha \Delta \epsilon^4 + 4 k^2 \alpha \Delta \epsilon^4 + 32 k \alpha \beta \Delta \epsilon^4 - \\
& 24 k^2 \alpha \beta \Delta \epsilon^4 + 20 k^2 \alpha \beta^2 \Delta \epsilon^4 - k \alpha \Delta_1 + k^2 \alpha \Delta_1 - k \alpha \beta \Delta_1 - k^2 \alpha \beta^2 \Delta_1 + \\
& 4 k \alpha \epsilon \Delta_1 - 4 k^2 \alpha \epsilon \Delta_1 + 4 k \alpha \beta \epsilon \Delta_1 + 4 k^2 \alpha \beta^2 \epsilon \Delta_1 - 4 k \alpha \epsilon^2 \Delta_1 + \\
& 4 k^2 \alpha \epsilon^2 \Delta_1 - 4 k \alpha \beta \epsilon^2 \Delta_1 - 4 k^2 \alpha \beta^2 \epsilon^2 \Delta_1 + 4 k \alpha \epsilon \Delta_n - 4 k^2 \alpha \epsilon \Delta_n + \\
& 4 k \alpha \beta \epsilon \Delta_n + 4 k^2 \alpha \beta^2 \epsilon \Delta_n - 20 k \alpha \epsilon^2 \Delta_n + 20 k^2 \alpha \epsilon^2 \Delta_n - 20 k \alpha \beta \epsilon^2 \Delta_n - \\
& 20 k^2 \alpha \beta^2 \epsilon^2 \Delta_n + 32 k \alpha \epsilon^3 \Delta_n - 32 k^2 \alpha \epsilon^3 \Delta_n + 32 k \alpha \beta \epsilon^3 \Delta_n + 32 k^2 \alpha \beta^2 \epsilon^3 \Delta_n - \\
& 16 k \alpha \epsilon^4 \Delta_n + 16 k^2 \alpha \epsilon^4 \Delta_n - 16 k \alpha \beta \epsilon^4 \Delta_n - 16 k^2 \alpha \beta^2 \epsilon^4 \Delta_n) - \\
27 & k (2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \epsilon + 24 k \alpha \Delta \epsilon - 8 k^2 \alpha \Delta \epsilon + 48 \alpha \Delta \epsilon^2 - \\
& 72 k \alpha \Delta \epsilon^2 + 24 k^2 \alpha \Delta \epsilon^2 - 64 \alpha \Delta \epsilon^3 + 96 k \alpha \Delta \epsilon^3 - \\
& 32 k^2 \alpha \Delta \epsilon^3 + 32 \alpha \Delta \epsilon^4 - 48 k \alpha \Delta \epsilon^4 + 16 k^2 \alpha \Delta \epsilon^4)^2 \\
& (\beta + 2 \beta^2 + \beta^3 + k \alpha \beta \Delta + 2 \epsilon + 2 \beta \epsilon - 2 \beta^2 \epsilon - 2 \beta^3 \epsilon - 5 k \alpha \beta \Delta \epsilon + 2 k \alpha \beta^2 \Delta \epsilon - \\
& k \alpha \beta^3 \Delta \epsilon - 2 \epsilon^2 - 2 \beta \epsilon^2 + 2 \beta^2 \epsilon^2 + 2 \beta^3 \epsilon^2 + 9 k \alpha \beta \Delta \epsilon^2 - 10 k \alpha \beta^2 \Delta \epsilon^2 + \\
& 5 k \alpha \beta^3 \Delta \epsilon^2 - 8 k \alpha \beta \Delta \epsilon^3 + 16 k \alpha \beta^2 \Delta \epsilon^3 - 8 k \alpha \beta^3 \Delta \epsilon^3 + 4 k \alpha \beta \Delta \epsilon^4 - \\
& 8 k \alpha \beta^2 \Delta \epsilon^4 + 4 k \alpha \beta^3 \Delta \epsilon^4 + k \alpha \beta \Delta_1 + k \alpha \beta^2 \Delta_1 - 4 k \alpha \beta \epsilon \Delta_1 - \\
& 4 k \alpha \beta^2 \epsilon \Delta_1 + 4 k \alpha \beta \epsilon^2 \Delta_1 + 4 k \alpha \beta^2 \epsilon^2 \Delta_1 + k \alpha \epsilon \Delta_n - k \alpha \beta \epsilon \Delta_n - \\
& k \alpha \beta^2 \epsilon \Delta_n + k \alpha \beta^3 \epsilon \Delta_n - 5 k \alpha \epsilon^2 \Delta_n + 5 k \alpha \beta \epsilon^2 \Delta_n + 5 k \alpha \beta^2 \epsilon^2 \Delta_n - \\
& 5 k \alpha \beta^3 \epsilon^2 \Delta_n + 8 k \alpha \epsilon^3 \Delta_n - 8 k \alpha \beta \epsilon^3 \Delta_n - 8 k \alpha \beta^2 \epsilon^3 \Delta_n + 8 k \alpha \beta^3 \epsilon^3 \Delta_n - \\
& 4 k \alpha \epsilon^4 \Delta_n + 4 k \alpha \beta \epsilon^4 \Delta_n + 4 k \alpha \beta^2 \epsilon^4 \Delta_n - 4 k \alpha \beta^3 \epsilon^4 \Delta_n) + \\
\sqrt{4} & (-(-3 \alpha \Delta + 5 k \alpha \Delta - 2 k^2 \alpha \Delta - k \alpha \beta \Delta + k^2 \alpha \beta \Delta + 24 \alpha \Delta \epsilon - 36 k \alpha \Delta \epsilon + 12 k^2 \alpha \Delta \epsilon \\
& \epsilon + 12 k \alpha \beta \Delta \epsilon - 12 k^2 \alpha \beta \Delta \epsilon - 72 \alpha \Delta \epsilon^2 + 100 k \alpha \Delta \epsilon^2 - 28 k^2 \alpha \Delta \epsilon^2 - \\
& 44 k \alpha \beta \Delta \epsilon^2 + 44 k^2 \alpha \beta \Delta \epsilon^2 + 96 \alpha \Delta \epsilon^3 - 128 k \alpha \Delta \epsilon^3 + 32 k^2 \alpha \Delta \epsilon^3 + \\
& 64 k \alpha \beta \Delta \epsilon^3 - 64 k^2 \alpha \beta \Delta \epsilon^3 - 48 \alpha \Delta \epsilon^4 + 64 k \alpha \Delta \epsilon^4 - 16 k^2 \alpha \Delta \epsilon^4 - \\
& 32 k \alpha \beta \Delta \epsilon^4 + 32 k^2 \alpha \beta \Delta \epsilon^4 + k \alpha \Delta_1 - k^2 \alpha \Delta_1 + k \alpha \beta \Delta_1 - k^2 \alpha \beta \Delta_1 - \\
& 4 k \alpha \epsilon \Delta_1 + 4 k^2 \alpha \epsilon \Delta_1 - 4 k \alpha \beta \epsilon \Delta_1 + 4 k^2 \alpha \beta \epsilon \Delta_1 + 4 k \alpha \epsilon^2 \Delta_1 - \\
& 4 k^2 \alpha \epsilon^2 \Delta_1 + 4 k \alpha \beta \epsilon^2 \Delta_1 - 4 k^2 \alpha \beta \epsilon^2 \Delta_1 - 4 k \alpha \epsilon \Delta_n + 4 k^2 \alpha \epsilon \Delta_n - \\
& 4 k \alpha \beta \epsilon \Delta_n + 4 k^2 \alpha \beta \epsilon \Delta_n + 20 k \alpha \epsilon^2 \Delta_n - 20 k^2 \alpha \epsilon^2 \Delta_n + 20 k \alpha \beta \epsilon^2 \Delta_n - \\
& 20 k^2 \alpha \beta \epsilon^2 \Delta_n - 32 k \alpha \epsilon^3 \Delta_n + 32 k^2 \alpha \epsilon^3 \Delta_n - 32 k \alpha \beta \epsilon^3 \Delta_n + 32 k^2 \alpha \beta \epsilon^3 \Delta_n - \\
& 16 k \alpha \epsilon^4 \Delta_n - 16 k^2 \alpha \epsilon^4 \Delta_n + 16 k \alpha \beta \epsilon^4 \Delta_n - 16 k^2 \alpha \beta \epsilon^4 \Delta_n)^2 +
\end{aligned}$$

[illegible]

$$\begin{aligned}
& 4 k \alpha \beta \Delta \epsilon^4 - 8 k \alpha \beta^2 \Delta \epsilon^4 + 4 k \alpha \beta^3 \Delta \epsilon^4 + k \alpha \beta \Delta_1 + k \alpha \beta^2 \Delta_1 - 4 k \alpha \beta \epsilon \Delta_1 - \\
& 4 k \alpha \beta^2 \epsilon \Delta_1 + 4 k \alpha \beta \epsilon^2 \Delta_1 + 4 k \alpha \beta^2 \epsilon^2 \Delta_1 + k \alpha \epsilon \Delta_n - k \alpha \beta \epsilon \Delta_n - \\
& k \alpha \beta^2 \epsilon \Delta_n + k \alpha \beta^3 \epsilon \Delta_n - 5 k \alpha \epsilon^2 \Delta_n + 5 k \alpha \beta \epsilon^2 \Delta_n + 5 k \alpha \beta^2 \epsilon^2 \Delta_n - \\
& 5 k \alpha \beta^3 \epsilon^2 \Delta_n + 8 k \alpha \epsilon^3 \Delta_n - 8 k \alpha \beta \epsilon^3 \Delta_n - 8 k \alpha \beta^2 \epsilon^3 \Delta_n + 8 k \alpha \beta^3 \epsilon^3 \Delta_n - \\
& 4 k \alpha \epsilon^4 \Delta_n + 4 k \alpha \beta \epsilon^4 \Delta_n + 4 k \alpha \beta^2 \epsilon^4 \Delta_n - 4 k \alpha \beta^3 \epsilon^4 \Delta_n) \Big)^{2/3} \Big)^{1/3} \Big) - \\
& \left((1 + i \sqrt{3}) \left(-2 (-3 \alpha \Delta + 5 k \alpha \Delta - 2 k^2 \alpha \Delta - k \alpha \beta \Delta + k^2 \alpha \beta \Delta + 24 \alpha \Delta \epsilon - 36 k \alpha \Delta \epsilon + \right. \right. \\
& 12 k^2 \alpha \Delta \epsilon + 12 k \alpha \beta \Delta \epsilon - 12 k^2 \alpha \beta \Delta \epsilon - 72 \alpha \Delta \epsilon^2 + 100 k \alpha \Delta \epsilon^2 - \\
& 28 k^2 \alpha \Delta \epsilon^2 - 44 k \alpha \beta \Delta \epsilon^2 + 44 k^2 \alpha \beta \Delta \epsilon^2 + 96 \alpha \Delta \epsilon^3 - 128 k \alpha \Delta \epsilon^3 + \\
& 32 k^2 \alpha \Delta \epsilon^3 + 64 k \alpha \beta \Delta \epsilon^3 - 64 k^2 \alpha \beta \Delta \epsilon^3 - 48 \alpha \Delta \epsilon^4 + 64 k \alpha \Delta \epsilon^4 - \\
& 16 k^2 \alpha \Delta \epsilon^4 - 32 k \alpha \beta \Delta \epsilon^4 + 32 k^2 \alpha \beta \Delta \epsilon^4 + k \alpha \Delta_1 - k^2 \alpha \Delta_1 + k \alpha \beta \Delta_1 - \\
& k^2 \alpha \beta \Delta_1 - 4 k \alpha \epsilon \Delta_1 + 4 k^2 \alpha \epsilon \Delta_1 - 4 k \alpha \beta \epsilon \Delta_1 + 4 k^2 \alpha \beta \epsilon \Delta_1 + 4 k \alpha \epsilon^2 \Delta_1 - \\
& 4 k^2 \alpha \epsilon^2 \Delta_1 + 4 k \alpha \beta \epsilon^2 \Delta_1 - 4 k^2 \alpha \beta \epsilon^2 \Delta_1 - 4 k \alpha \epsilon \Delta_n + 4 k^2 \alpha \epsilon \Delta_n - \\
& 4 k \alpha \beta \epsilon \Delta_n + 4 k^2 \alpha \beta \epsilon \Delta_n + 20 k \alpha \epsilon^2 \Delta_n - 20 k^2 \alpha \epsilon^2 \Delta_n + 20 k \alpha \beta \epsilon^2 \Delta_n - \\
& 20 k^2 \alpha \beta \epsilon^2 \Delta_n - 32 k \alpha \epsilon^3 \Delta_n + 32 k^2 \alpha \epsilon^3 \Delta_n - 32 k \alpha \beta \epsilon^3 \Delta_n + 32 k^2 \alpha \beta \epsilon^3 \Delta_n + \\
& 16 k \alpha \epsilon^4 \Delta_n - 16 k^2 \alpha \epsilon^4 \Delta_n + 16 k \alpha \beta \epsilon^4 \Delta_n - 16 k^2 \alpha \beta \epsilon^4 \Delta_n) \Big)^3 + \\
& 9 \left(2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \epsilon + 24 k \alpha \Delta \epsilon - 8 k^2 \alpha \Delta \epsilon + 48 \alpha \Delta \epsilon^2 - \right. \\
& 72 k \alpha \Delta \epsilon^2 + 24 k^2 \alpha \Delta \epsilon^2 - 64 \alpha \Delta \epsilon^3 + 96 k \alpha \Delta \epsilon^3 - \\
& 32 k^2 \alpha \Delta \epsilon^3 + 32 \alpha \Delta \epsilon^4 - 48 k \alpha \Delta \epsilon^4 + 16 k^2 \alpha \Delta \epsilon^4) \\
& \left(-3 \alpha \Delta + 5 k \alpha \Delta - 2 k^2 \alpha \Delta - k \alpha \beta \Delta + k^2 \alpha \beta \Delta + 24 \alpha \Delta \epsilon - 36 k \alpha \Delta \epsilon + \right. \\
& 12 k^2 \alpha \Delta \epsilon + 12 k \alpha \beta \Delta \epsilon - 12 k^2 \alpha \beta \Delta \epsilon - 72 \alpha \Delta \epsilon^2 + 100 k \alpha \Delta \epsilon^2 - \\
& 28 k^2 \alpha \Delta \epsilon^2 - 44 k \alpha \beta \Delta \epsilon^2 + 44 k^2 \alpha \beta \Delta \epsilon^2 + 96 \alpha \Delta \epsilon^3 - 128 k \alpha \Delta \epsilon^3 + \\
& 32 k^2 \alpha \Delta \epsilon^3 + 64 k \alpha \beta \Delta \epsilon^3 - 64 k^2 \alpha \beta \Delta \epsilon^3 - 48 \alpha \Delta \epsilon^4 + 64 k \alpha \Delta \epsilon^4 - \\
& 16 k^2 \alpha \Delta \epsilon^4 - 32 k \alpha \beta \Delta \epsilon^4 + 32 k^2 \alpha \beta \Delta \epsilon^4 + k \alpha \Delta_1 - k^2 \alpha \Delta_1 + k \alpha \beta \Delta_1 - \\
& k^2 \alpha \beta \Delta_1 - 4 k \alpha \epsilon \Delta_1 + 4 k^2 \alpha \epsilon \Delta_1 - 4 k \alpha \beta \epsilon \Delta_1 + 4 k^2 \alpha \beta \epsilon \Delta_1 + \\
& 4 k \alpha \epsilon^2 \Delta_1 - 4 k^2 \alpha \epsilon^2 \Delta_1 + 4 k \alpha \beta \epsilon^2 \Delta_1 - 4 k^2 \alpha \beta \epsilon^2 \Delta_1 - 4 k \alpha \epsilon \Delta_n + \\
& 4 k^2 \alpha \epsilon \Delta_n - 4 k \alpha \beta \epsilon \Delta_n + 4 k^2 \alpha \beta \epsilon \Delta_n + 20 k \alpha \epsilon^2 \Delta_n - 20 k^2 \alpha \epsilon^2 \Delta_n + \\
& 20 k \alpha \beta \epsilon^2 \Delta_n - 20 k^2 \alpha \beta \epsilon^2 \Delta_n - 32 k \alpha \epsilon^3 \Delta_n + 32 k^2 \alpha \epsilon^3 \Delta_n - 32 k \alpha \beta \epsilon^3 \Delta_n + \\
& 32 k^2 \alpha \beta \epsilon^3 \Delta_n + 16 k \alpha \epsilon^4 \Delta_n - 16 k^2 \alpha \epsilon^4 \Delta_n + 16 k \alpha \beta \epsilon^4 \Delta_n - 16 k^2 \alpha \beta \epsilon^4 \Delta_n) \\
& \left(-k \beta - 2 k \beta^2 - k \beta^3 + \alpha \Delta - 2 k \alpha \Delta + k^2 \alpha \Delta + k \alpha \beta \Delta - 2 k^2 \alpha \beta \Delta - 4 k \epsilon - \right. \\
& 8 k \beta \epsilon - 4 k \beta^2 \epsilon - 8 \alpha \Delta \epsilon + 12 k \alpha \Delta \epsilon - 5 k^2 \alpha \Delta \epsilon - 12 k \alpha \beta \Delta \epsilon + \\
& 14 k^2 \alpha \beta \Delta \epsilon - 5 k^2 \alpha \beta^2 \Delta \epsilon + 4 k \epsilon^2 + 8 k \beta \epsilon^2 + 4 k \beta^2 \epsilon^2 + 24 \alpha \Delta \epsilon^2 - \\
& 28 k \alpha \Delta \epsilon^2 + 9 k^2 \alpha \Delta \epsilon^2 + 44 k \alpha \beta \Delta \epsilon^2 - 38 k^2 \alpha \beta \Delta \epsilon^2 + 25 k^2 \alpha \beta^2 \Delta \epsilon^2 - \\
& 32 \alpha \Delta \epsilon^3 + 32 k \alpha \Delta \epsilon^3 - 8 k^2 \alpha \Delta \epsilon^3 - 64 k \alpha \beta \Delta \epsilon^3 + 48 k^2 \alpha \beta \Delta \epsilon^3 - \\
& 40 k^2 \alpha \beta^2 \Delta \epsilon^3 + 16 \alpha \Delta \epsilon^4 - 16 k \alpha \Delta \epsilon^4 + 4 k^2 \alpha \Delta \epsilon^4 + 32 k \alpha \beta \Delta \epsilon^4 - \\
& 24 k^2 \alpha \beta \Delta \epsilon^4 + 20 k^2 \alpha \beta^2 \Delta \epsilon^4 - k \alpha \Delta_1 + k^2 \alpha \Delta_1 - k \alpha \beta \Delta_1 - k^2 \alpha \beta^2 \Delta_1 + \\
& 4 k \alpha \epsilon \Delta_1 - 4 k^2 \alpha \epsilon \Delta_1 + 4 k \alpha \beta \epsilon \Delta_1 + 4 k^2 \alpha \beta^2 \epsilon \Delta_1 - 4 k \alpha \epsilon^2 \Delta_1 + \\
& 4 k^2 \alpha \epsilon^2 \Delta_1 - 4 k \alpha \beta \epsilon^2 \Delta_1 - 4 k^2 \alpha \beta^2 \epsilon^2 \Delta_1 + 4 k \alpha \epsilon \Delta_n - 4 k^2 \alpha \epsilon \Delta_n + \\
& 4 k \alpha \beta \epsilon \Delta_n + 4 k^2 \alpha \beta^2 \epsilon \Delta_n - 20 k \alpha \epsilon^2 \Delta_n + 20 k^2 \alpha \epsilon^2 \Delta_n - 20 k \alpha \beta \epsilon^2 \Delta_n - \\
& 20 k^2 \alpha \beta^2 \epsilon^2 \Delta_n + 32 k \alpha \epsilon^3 \Delta_n - 32 k^2 \alpha \epsilon^3 \Delta_n + 32 k \alpha \beta \epsilon^3 \Delta_n + 32 k^2 \alpha \beta^2 \epsilon^3 \Delta_n - \\
& 16 k \alpha \epsilon^4 \Delta_n + 16 k^2 \alpha \epsilon^4 \Delta_n - 16 k \alpha \beta \epsilon^4 \Delta_n - 16 k^2 \alpha \beta^2 \epsilon^4 \Delta_n) - \\
& 27 k \left(2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \epsilon + 24 k \alpha \Delta \epsilon - 8 k^2 \alpha \Delta \epsilon + 48 \alpha \Delta \epsilon^2 - \right. \\
& 72 k \alpha \Delta \epsilon^2 + 24 k^2 \alpha \Delta \epsilon^2 - 64 \alpha \Delta \epsilon^3 + 96 k \alpha \Delta \epsilon^3 - \\
& 32 k^2 \alpha \Delta \epsilon^3 + 32 \alpha \Delta \epsilon^4 - 48 k \alpha \Delta \epsilon^4 + 16 k^2 \alpha \Delta \epsilon^4) \Big)^2 \\
& \left(\beta + 2 \beta^2 + \beta^3 + k \alpha \beta \Delta + 2 \epsilon + 2 \beta \epsilon - 2 \beta^2 \epsilon - 2 \beta^3 \epsilon - 5 k \alpha \beta \Delta \epsilon + 2 k \alpha \beta^2 \Delta \epsilon - \right. \\
& k \alpha \beta^3 \Delta \epsilon - 2 \epsilon^2 - 2 \beta \epsilon^2 + 2 \beta^2 \epsilon^2 + 2 \beta^3 \epsilon^2 + 9 k \alpha \beta \Delta \epsilon^2 - 10 k \alpha \beta^2 \Delta \epsilon^2 + \\
& 5 k \alpha \beta^3 \Delta \epsilon^2 - 8 k \alpha \beta \Delta \epsilon^3 + 16 k \alpha \beta^2 \Delta \epsilon^3 - 8 k \alpha \beta^3 \Delta \epsilon^3 + 4 k \alpha \beta \Delta \epsilon^4 - \\
& 8 k \alpha \beta^2 \Delta \epsilon^4 + 4 k \alpha \beta^3 \Delta \epsilon^4 + k \alpha \beta \Delta_1 + k \alpha \beta^2 \Delta_1 - 4 k \alpha \beta \epsilon \Delta_1 - \\
& 4 k \alpha \beta^2 \epsilon \Delta_1 + 4 k \alpha \beta \epsilon^2 \Delta_1 + 4 k \alpha \beta^2 \epsilon^2 \Delta_1 + k \alpha \epsilon \Delta_n - k \alpha \beta \epsilon \Delta_n - \\
& k \alpha \beta^2 \epsilon \Delta_n + k \alpha \beta^3 \epsilon \Delta_n - 5 k \alpha \epsilon^2 \Delta_n + 5 k \alpha \beta \epsilon^2 \Delta_n + 5 k \alpha \beta^2 \epsilon^2 \Delta_n - \\
& 5 k \alpha \beta^3 \epsilon^2 \Delta_n + 8 k \alpha \epsilon^3 \Delta_n - 8 k \alpha \beta \epsilon^3 \Delta_n - 8 k \alpha \beta^2 \epsilon^3 \Delta_n + 8 k \alpha \beta^3 \epsilon^3 \Delta_n - \\
& 4 k \alpha \epsilon^4 \Delta_n + 4 k \alpha \beta \epsilon^4 \Delta_n + 4 k \alpha \beta^2 \epsilon^4 \Delta_n - 4 k \alpha \beta^3 \epsilon^4 \Delta_n) + \\
& \sqrt{4 \left(-(-3 \alpha \Delta + 5 k \alpha \Delta - 2 k^2 \alpha \Delta - k \alpha \beta \Delta + k^2 \alpha \beta \Delta + 24 \alpha \Delta \epsilon - 36 k \alpha \Delta \epsilon + 12 k^2 \alpha \Delta \right.}
\end{aligned}$$

[illegible]

$$\left(\begin{aligned} &4 k^2 \alpha \beta^2 \epsilon^2 \Delta_1 + 4 k \alpha \epsilon \Delta_n - 4 k^2 \alpha \epsilon \Delta_n + 4 k \alpha \beta \epsilon \Delta_n + 4 k^2 \alpha \beta^2 \epsilon \Delta_n - \\ &20 k \alpha \epsilon^2 \Delta_n + 20 k^2 \alpha \epsilon^2 \Delta_n - 20 k \alpha \beta \epsilon^2 \Delta_n - 20 k^2 \alpha \beta^2 \epsilon^2 \Delta_n + 32 k \alpha \epsilon^3 \Delta_n - \\ &32 k^2 \alpha \epsilon^3 \Delta_n + 32 k \alpha \beta \epsilon^3 \Delta_n + 32 k^2 \alpha \beta^2 \epsilon^3 \Delta_n - 16 k \alpha \epsilon^4 \Delta_n + 16 k^2 \alpha \epsilon^4 \Delta_n - \\ &16 k \alpha \beta \epsilon^4 \Delta_n - 16 k^2 \alpha \beta^2 \epsilon^4 \Delta_n \Big) - 27 k \Big(2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \epsilon + \\ &24 k \alpha \Delta \epsilon - 8 k^2 \alpha \Delta \epsilon + 48 \alpha \Delta \epsilon^2 - 72 k \alpha \Delta \epsilon^2 + 24 k^2 \alpha \Delta \epsilon^2 - 64 \alpha \Delta \epsilon^3 + \\ &96 k \alpha \Delta \epsilon^3 - 32 k^2 \alpha \Delta \epsilon^3 + 32 \alpha \Delta \epsilon^4 - 48 k \alpha \Delta \epsilon^4 + 16 k^2 \alpha \Delta \epsilon^4 \Big)^2 \\ &\Big(\beta + 2 \beta^2 + \beta^3 + k \alpha \beta \Delta + 2 \epsilon + 2 \beta \epsilon - 2 \beta^2 \epsilon - 2 \beta^3 \epsilon - 5 k \alpha \beta \Delta \epsilon + \\ &2 k \alpha \beta^2 \Delta \epsilon - k \alpha \beta^3 \Delta \epsilon - 2 \epsilon^2 - 2 \beta \epsilon^2 + 2 \beta^2 \epsilon^2 + 2 \beta^3 \epsilon^2 + 9 k \alpha \beta \Delta \epsilon^2 - \\ &10 k \alpha \beta^2 \Delta \epsilon^2 + 5 k \alpha \beta^3 \Delta \epsilon^2 - 8 k \alpha \beta \Delta \epsilon^3 + 16 k \alpha \beta^2 \Delta \epsilon^3 - 8 k \alpha \beta^3 \Delta \epsilon^3 + \\ &4 k \alpha \beta \Delta \epsilon^4 - 8 k \alpha \beta^2 \Delta \epsilon^4 + 4 k \alpha \beta^3 \Delta \epsilon^4 + k \alpha \beta \Delta_1 + k \alpha \beta^2 \Delta_1 - 4 k \alpha \beta \epsilon \Delta_1 - \\ &4 k \alpha \beta^2 \epsilon \Delta_1 + 4 k \alpha \beta \epsilon^2 \Delta_1 + 4 k \alpha \beta^2 \epsilon^2 \Delta_1 + k \alpha \epsilon \Delta_n - k \alpha \beta \epsilon \Delta_n - \\ &k \alpha \beta^2 \epsilon \Delta_n + k \alpha \beta^3 \epsilon \Delta_n - 5 k \alpha \epsilon^2 \Delta_n + 5 k \alpha \beta \epsilon^2 \Delta_n + 5 k \alpha \beta^2 \epsilon^2 \Delta_n - \\ &5 k \alpha \beta^3 \epsilon^2 \Delta_n + 8 k \alpha \epsilon^3 \Delta_n - 8 k \alpha \beta \epsilon^3 \Delta_n - 8 k \alpha \beta^2 \epsilon^3 \Delta_n + 8 k \alpha \beta^3 \epsilon^3 \Delta_n - \\ &4 k \alpha \epsilon^4 \Delta_n + 4 k \alpha \beta \epsilon^4 \Delta_n + 4 k \alpha \beta^2 \epsilon^4 \Delta_n - 4 k \alpha \beta^3 \epsilon^4 \Delta_n \Big)^2 \Big)^{1/3} \Big) / \\ &(6 \times 2^{1/3} (2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta - 16 \alpha \Delta \epsilon + 24 k \alpha \Delta \epsilon - 8 k^2 \alpha \Delta \epsilon + \\ &48 \\ &\alpha \\ &\Delta \\ &\epsilon^2 - 72 \\ &k \\ &\alpha \\ &\Delta \\ &\epsilon^2 + 24 \\ &k^2 \\ &\alpha \\ &\Delta \\ &\epsilon^2 - 64 \\ &\alpha \\ &\Delta \\ &\epsilon^3 + 96 \\ &k \\ &\alpha \\ &\Delta \\ &\epsilon^3 - 32 \\ &k^2 \\ &\alpha \\ &\Delta \\ &\epsilon^3 + 32 \\ &\alpha \\ &\Delta \\ &\epsilon^4 - 48 \\ &k \\ &\alpha \\ &\Delta \\ &\epsilon^4 + 16 \\ &k^2 \\ &\alpha \\ &\Delta \\ &\epsilon^4))))) \end{aligned}$$

$$\begin{aligned}
In[*] := & -\frac{1}{N} p_1 \left(1 - 2(1 - \epsilon) \epsilon - \frac{(1 - 2\epsilon)^2 (\beta + p_1)}{1 + \beta} - \right. \\
& k \alpha (1 - 2\epsilon)^2 \left(\frac{1}{(k + k\beta)^3} \Delta (1 - 2\epsilon)^2 (k^3 \beta^3 + k p_1 + 3 k^3 \beta^2 p_1 + \right. \\
& 3(-1 + k) k p_1^2 + (-2 + k)(-1 + k) k p_1^3 + 3 k \beta (k p_1 - k p_1^2 + k^2 p_1^2)) - \\
& (-1 + \epsilon) \epsilon \Delta_n + \frac{(k \beta + k p_1) (\Delta + \Delta(-1 + \epsilon) \epsilon + \Delta_1 + 4(-1 + \epsilon) \epsilon \Delta_n)}{k + k\beta} - \frac{1}{(k + k\beta)^2} \\
& \left. \left(k^2 \beta^2 + k p_1 + 2 k^2 \beta p_1 - k p_1^2 + k^2 p_1^2 \right) (2 \Delta + 4 \Delta(-1 + \epsilon) \epsilon + \Delta_1 + 4(-1 + \epsilon) \epsilon \Delta_n) \right) \Bigg) + \\
& \frac{1}{N} (1 - p_1) \left(2(1 - \epsilon) \epsilon + \frac{(1 - 2\epsilon)^2 (\beta + p_1)}{1 + \beta} + k \alpha (1 - 2\epsilon)^2 \left(\frac{1}{(k + k\beta)^3} \Delta (1 - 2\epsilon)^2 (k^3 \beta^3 + \right. \right. \\
& k p_1 + 3 k^3 \beta^2 p_1 + 3(-1 + k) k p_1^2 + (-2 + k)(-1 + k) k p_1^3 + 3 k \beta (k p_1 - k p_1^2 + k^2 p_1^2)) - \\
& (-1 + \epsilon) \epsilon \Delta_n + \frac{(k \beta + k p_1) (\Delta + \Delta(-1 + \epsilon) \epsilon + \Delta_1 + 4(-1 + \epsilon) \epsilon \Delta_n)}{k + k\beta} - \\
& \frac{1}{(k + k\beta)^2} (k^2 \beta^2 + k p_1 + 2 k^2 \beta p_1 - k p_1^2 + k^2 p_1^2) \\
& \left. \left. \left(2 \Delta + 4 \Delta(-1 + \epsilon) \epsilon + \Delta_1 + 4(-1 + \epsilon) \epsilon \Delta_n \right) \right) \right) \Bigg) / . \{ \epsilon \rightarrow 0 \}
\end{aligned}$$

$$\begin{aligned}
Out[*] := & -\frac{1}{N} \\
& p_1 \left(1 - \frac{\beta + p_1}{1 + \beta} - k \alpha \left(\frac{1}{(k + k\beta)^3} \Delta (k^3 \beta^3 + k p_1 + 3 k^3 \beta^2 p_1 + 3(-1 + k) k p_1^2 + (-2 + k)(-1 + k) k p_1^3 + \right. \right. \\
& 3 k \beta (k p_1 - k p_1^2 + k^2 p_1^2)) + \\
& \left. \frac{(k \beta + k p_1) (\Delta + \Delta_1)}{k + k\beta} - \frac{(k^2 \beta^2 + k p_1 + 2 k^2 \beta p_1 - k p_1^2 + k^2 p_1^2) (2 \Delta + \Delta_1)}{(k + k\beta)^2} \right) \Bigg) + \\
& \frac{1}{N} (1 - p_1) \left(\frac{\beta + p_1}{1 + \beta} + k \alpha \left(\frac{1}{(k + k\beta)^3} \Delta (k^3 \beta^3 + k p_1 + 3 k^3 \beta^2 p_1 + 3(-1 + k) k p_1^2 + \right. \right. \\
& (-2 + k)(-1 + k) k p_1^3 + 3 k \beta (k p_1 - k p_1^2 + k^2 p_1^2)) + \\
& \left. \frac{(k \beta + k p_1) (\Delta + \Delta_1)}{k + k\beta} - \frac{(k^2 \beta^2 + k p_1 + 2 k^2 \beta p_1 - k p_1^2 + k^2 p_1^2) (2 \Delta + \Delta_1)}{(k + k\beta)^2} \right) \Bigg)
\end{aligned}$$

In[*]:= **Solve**[
| 解方程

$$\begin{aligned}
& -\frac{1}{N} p_1 \left(1 - \frac{\beta + p_1}{1 + \beta} - k \alpha \left(\frac{1}{(k + k \beta)^3} \Delta (k^3 \beta^3 + k p_1 + 3 k^3 \beta^2 p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) \right. \right. \\
& \quad \left. \left. k p_1^3 + 3 k \beta (k p_1 - k p_1^2 + k^2 p_1^2) \right) + \right. \\
& \quad \left. \frac{(k \beta + k p_1) (\Delta + \Delta_1)}{k + k \beta} - \frac{(k^2 \beta^2 + k p_1 + 2 k^2 \beta p_1 - k p_1^2 + k^2 p_1^2) (2 \Delta + \Delta_1)}{(k + k \beta)^2} \right) + \\
& \frac{1}{N} (1 - p_1) \left(\frac{\beta + p_1}{1 + \beta} + k \alpha \left(\frac{1}{(k + k \beta)^3} \Delta (k^3 \beta^3 + k p_1 + 3 k^3 \beta^2 p_1 + 3 (-1 + k) k p_1^2 + \right. \right. \\
& \quad \left. \left. (-2 + k) (-1 + k) k p_1^3 + 3 k \beta (k p_1 - k p_1^2 + k^2 p_1^2) \right) + \right. \\
& \quad \left. \frac{(k \beta + k p_1) (\Delta + \Delta_1)}{k + k \beta} - \frac{(k^2 \beta^2 + k p_1 + 2 k^2 \beta p_1 - k p_1^2 + k^2 p_1^2) (2 \Delta + \Delta_1)}{(k + k \beta)^2} \right) = 0, p_1]
\end{aligned}$$

$$\begin{aligned}
Out[*]:= & \{ \{p_1 \rightarrow 1\}, \{p_1 \rightarrow \left(\alpha \Delta - 2 k \alpha \Delta + k^2 \alpha \Delta + k \alpha \beta \Delta - k^2 \alpha \beta \Delta - k \alpha \Delta_1 + k^2 \alpha \Delta_1 - k \alpha \beta \Delta_1 + k^2 \alpha \beta \Delta_1 - \right. \\
& \sqrt{\left((-\alpha \Delta + 2 k \alpha \Delta - k^2 \alpha \Delta - k \alpha \beta \Delta + k^2 \alpha \beta \Delta + k \alpha \Delta_1 - k^2 \alpha \Delta_1 + k \alpha \beta \Delta_1 - k^2 \alpha \beta \Delta_1)^2 - \right. \\
& \quad \left. 4 (2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta) (-k \beta - 2 k \beta^2 - k \beta^3 - k^2 \alpha \beta \Delta - k^2 \alpha \beta \Delta_1 - k^2 \alpha \beta^2 \Delta_1) \right)} \Big/ \\
& \left. (2 (2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta)) \right\}, \{p_1 \rightarrow \left(\alpha \Delta - 2 k \alpha \Delta + k^2 \alpha \Delta + k \alpha \beta \Delta - \right. \\
& \quad \left. k^2 \alpha \beta \Delta - k \alpha \Delta_1 + k^2 \alpha \Delta_1 - k \alpha \beta \Delta_1 + k^2 \alpha \beta \Delta_1 + \right. \\
& \sqrt{\left((-\alpha \Delta + 2 k \alpha \Delta - k^2 \alpha \Delta - k \alpha \beta \Delta + k^2 \alpha \beta \Delta + k \alpha \Delta_1 - k^2 \alpha \Delta_1 + k \alpha \beta \Delta_1 - k^2 \alpha \beta \Delta_1)^2 - \right. \\
& \quad \left. 4 (2 \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta) (-k \beta - 2 k \beta^2 - k \beta^3 - k^2 \alpha \beta \Delta - k^2 \alpha \beta \Delta_1 - k^2 \alpha \beta^2 \Delta_1) \right)} \Big/ (2 (2 \\
& \quad \left. \alpha \Delta - 3 k \alpha \Delta + k^2 \alpha \Delta) \right) \} \}
\end{aligned}$$

$$\begin{aligned}
\text{In}[1] := & -\frac{1}{N} p_1 \left(1 - 2 (1 - \epsilon) \epsilon - \frac{(1 - 2 \epsilon)^2 (\beta + p_1)}{1 + \beta} - \right. \\
& k \alpha (1 - 2 \epsilon)^2 \left(\frac{1}{(k + k \beta)^3} \Delta (1 - 2 \epsilon)^2 (k^3 \beta^3 + k p_1 + 3 k^3 \beta^2 p_1 + \right. \\
& 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3 + 3 k \beta (k p_1 - k p_1^2 + k^2 p_1^2)) - \\
& (-1 + \epsilon) \epsilon \Delta_n + \frac{(k \beta + k p_1) (\Delta + \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n)}{k + k \beta} - \frac{1}{(k + k \beta)^2} \\
& \left. \left(k^2 \beta^2 + k p_1 + 2 k^2 \beta p_1 - k p_1^2 + k^2 p_1^2 \right) (2 \Delta + 4 \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n) \right) \right) + \\
& \frac{1}{N} (1 - p_1) \left(2 (1 - \epsilon) \epsilon + \frac{(1 - 2 \epsilon)^2 (\beta + p_1)}{1 + \beta} + k \alpha (1 - 2 \epsilon)^2 \left(\frac{1}{(k + k \beta)^3} \Delta (1 - 2 \epsilon)^2 (k^3 \beta^3 + \right. \right. \\
& k p_1 + 3 k^3 \beta^2 p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3 + 3 k \beta (k p_1 - k p_1^2 + k^2 p_1^2)) - \\
& (-1 + \epsilon) \epsilon \Delta_n + \frac{(k \beta + k p_1) (\Delta + \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n)}{k + k \beta} - \\
& \frac{1}{(k + k \beta)^2} (k^2 \beta^2 + k p_1 + 2 k^2 \beta p_1 - k p_1^2 + k^2 p_1^2) \\
& \left. \left. \left. (2 \Delta + 4 \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n) \right) \right) \right) / . \{ \beta \rightarrow 0 \}
\end{aligned}$$

$$\begin{aligned}
\text{Out}[1] = & -\frac{1}{N} p_1 \left(1 - 2 (1 - \epsilon) \epsilon - (1 - 2 \epsilon)^2 p_1 - \right. \\
& k \alpha (1 - 2 \epsilon)^2 \left(\frac{\Delta (1 - 2 \epsilon)^2 (k p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3)}{k^3} - \right. \\
& (-1 + \epsilon) \epsilon \Delta_n + p_1 (\Delta + \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n) - \\
& \left. \frac{(k p_1 - k p_1^2 + k^2 p_1^2) (2 \Delta + 4 \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n)}{k^2} \right) \right) + \\
& \frac{1}{N} (1 - p_1) \left(2 (1 - \epsilon) \epsilon + (1 - 2 \epsilon)^2 p_1 + k \alpha (1 - 2 \epsilon)^2 \right. \\
& \left(\frac{\Delta (1 - 2 \epsilon)^2 (k p_1 + 3 (-1 + k) k p_1^2 + (-2 + k) (-1 + k) k p_1^3)}{k^3} - \right. \\
& (-1 + \epsilon) \epsilon \Delta_n + p_1 (\Delta + \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n) - \\
& \left. \left. \frac{(k p_1 - k p_1^2 + k^2 p_1^2) (2 \Delta + 4 \Delta (-1 + \epsilon) \epsilon + \Delta_1 + 4 (-1 + \epsilon) \epsilon \Delta_n)}{k^2} \right) \right) \right)
\end{aligned}$$

In[2]:= **Solve** $\left[-\frac{1}{N} p_1 \left(1-2(1-\epsilon)\epsilon - (1-2\epsilon)^2 p_1 - \right.\right.$
 解方程

$$k \alpha (1-2\epsilon)^2 \left(\frac{\Delta (1-2\epsilon)^2 (k p_1 + 3(-1+k) k p_1^2 + (-2+k)(-1+k) k p_1^3)}{k^3} - \frac{(-1+\epsilon) \in \Delta_n + p_1 (\Delta + \Delta(-1+\epsilon) \epsilon + \Delta_1 + 4(-1+\epsilon) \in \Delta_n) - (k p_1 - k p_1^2 + k^2 p_1^2) (2\Delta + 4\Delta(-1+\epsilon) \epsilon + \Delta_1 + 4(-1+\epsilon) \in \Delta_n)}{k^2} \right) + \frac{1}{N} (1-p_1) \left(2(1-\epsilon)\epsilon + (1-2\epsilon)^2 p_1 + k \alpha (1-2\epsilon)^2 \left(\frac{\Delta (1-2\epsilon)^2 (k p_1 + 3(-1+k) k p_1^2 + (-2+k)(-1+k) k p_1^3)}{k^3} - \frac{(-1+\epsilon) \in \Delta_n + p_1 (\Delta + \Delta(-1+\epsilon) \epsilon + \Delta_1 + 4(-1+\epsilon) \in \Delta_n) - (k p_1 - k p_1^2 + k^2 p_1^2) (2\Delta + 4\Delta(-1+\epsilon) \epsilon + \Delta_1 + 4(-1+\epsilon) \in \Delta_n)}{k^2} \right) \right) = 0, p_1]$$

Out[2]=

$$\left\{ \left\{ p_1 \rightarrow -\frac{-3\alpha\Delta + 5k\alpha\Delta - 2k^2\alpha\Delta + 24\alpha\Delta\epsilon - 36k\alpha\Delta\epsilon + \dots 32\dots + 32k^2\alpha\epsilon^3\Delta_n + 16k\alpha\epsilon^4\Delta_n - 16k^2\alpha\epsilon^4\Delta_n}{3(2\alpha\Delta - 3k\alpha\Delta + k^2\alpha\Delta - 16\alpha\Delta\epsilon + \dots 12\dots + 32\alpha\Delta\epsilon^4 - 48k\alpha\Delta\epsilon^4 + 16k^2\alpha\Delta\epsilon^4)} - \frac{\dots 1\dots}{\dots 1\dots} + \frac{\left(\dots 1\dots\right)^{1/3}}{3 \cdot 2^{\dots 1\dots} \left(\dots 1\dots\right)} \right\}, \left\{ p_1 \rightarrow \dots 1\dots \right\}, \left\{ p_1 \rightarrow \dots 1\dots \right\} \right\}$$

大型输出

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