```
ln[1] = q = q0 * Exp[I * (k * x + w * t)];
     qjn = q0 * Exp[I * (k * xj + w * tn)];
     qjbar = Integrate [q, \{x, xj - dx/2, xj + dx/2\}]/(dx);
     qjnbar = qjbar /. t \rightarrow tn;
     MA = qjn / qjnbar;
     qntbar = Integrate[q, {t, tn, tn + dt}] / (dt);
     qjntbar = qntbar /. x \rightarrow xj;
     MtA = qjntbar / qjn;
     qjphn = q0 * Exp[I * (k * (xj + dx/2) + w * tn)];
     RA = Simplify[MA * qjphn / (qjn)];
     vmultG = H + H^3/3*k^2;
     GnA = -U * RA / vmultG;
     GGA = RA / vmultG;
     GcA = -U * H / vmultG ;
     fn1A = H * vh + U * eh;
     fn1A = fn1A /. vh \rightarrow (GGA*Gca+GnA*eca) /. eh \rightarrow RA*eca;
     fn1Gca0A = fn1A / . Gca \rightarrow 0 ;
     fn1eca0A = fn1A/. eca \rightarrow 0;
     fnnA = Simplify[fn1Gca0A / eca];
     fnGA = fn1eca0A / Gca;
     fncA = H * GcA;
     fG1A = U*Gh + U*H*vh + g*H*eh;
     \texttt{fGlA} = \texttt{fGlA} \ / . \ \texttt{vh} \ \rightarrow \ (\texttt{GGA} \star \texttt{Gca} \ + \ \texttt{GnA} \star \texttt{eca}) \ \ / . \ \ \texttt{eh} \ \rightarrow \ \texttt{RA} \star \texttt{eca} \ / . \ \ \texttt{Gh} \ \rightarrow \ \texttt{RA} \star \texttt{Gca} \ ;
     fG1Gca0A = fG1A / . Gca \rightarrow 0 ;
     fGleca0A = fGlA /. eca \rightarrow 0;
     fGnA = Simplify[fG1Gca0A / eca];
     fGGA = Simplify[fGleca0A / Gca];
     fGcA = U * H * GcA;
     FnnA = -MtA*dt/dx*(1 - Exp[-I*k*dx])*fnnA;
     FnGA = -MtA * dt / dx * (1 - Exp[-I * k * dx]) * fnGA;
     FGnA = -MtA * dt / dx * (1 - Exp[-I * k * dx]) * fGnA;
     FGGA = -MtA * dt / dx * (1 - Exp[-I * k * dx]) * fGGA;
     MatA = {{FnnA, FnGA}, {FGnA, FGGA}};
     EA = \{\{1, 0\}, \{0, 1\}\} + MatA;
```

```
wAp = U * k + \frac{\sqrt{3} k \sqrt{g H (3 + H^2 k^2)}}{3 + H^2 k^2};
wAm = U * k - \frac{\sqrt{3} k \sqrt{g H (3 + H^2 k^2)}}{3 + H^2 k^2};
ln[37]:= M = 1;
    Merr = Series[M - MA, \{dx, 0, 4\}];
    Rm = 1;
    Rmerr = Series[Rm - RA, {dx, 0, 4}];
    Rp = Exp[I * k * dx];
    Rperr = Series[Rp - RA, {dx, 0, 4}];
    Ru = (1 + Exp[I*k*dx])/2;
     Ruerr = Series \left[ Ru - Exp \left[ I * k * dx / 2 \right], \left\{ dx, 0, 4 \right\} \right];
     Gold = H - H^3/3 * (2 * Cos[k * dx] - 2) / dx^2;
     GG2 = Simplify[Ru / Gold];
    GG2err = Series[GG2 - GGA, {dx, 0, 5}];
     Gn2 = Simplify[-U*Ru / Gold];
     Gn2err = Series[Gn2 - GnA, {dx, 0, 5}];
In[50]:= Text[Row[{"M || ", M}]]
     Text[Row[{"M || ", TeXForm[M]}]]
     Text[Row[{"M error || ", TeXForm[Merr]}]]
     Text[Row[{"M error || ", Merr}]]
     Text[" "]
     Text[Row[{"Rm || ", Rm}]]
     Text[Row[{"Rm || ", TeXForm[Rm]}]]
     Text[Row[{"Rm error || ", Rmerr}]]
    Text[Row[{"Rm error || ", TeXForm[Rmerr]}]]
     Text[" "]
     Text[Row[{"Rp || ", Rp}]]
    Text[Row[{"Rp || ", TeXForm[Rp]}]]
     Text[Row[{"Rp error || ", Rperr}]]
     Text[Row[{"Rp error || ", TeXForm[Rperr]}]]
    Text[" "]
     Text[Row[{"GG2 || ", GG2}]]
     Text[Row[{"GG2 || ", TeXForm[GG2]}]]
     Text[Row[{"GG2 error || ", GG2err}]]
     Text[Row[{"GG2 error || ", TeXForm[GG2err]}]]
     Text[" "]
     Text[Row[{"Gn2 || ", Gn2}]]
     Text[Row[{"Gn2 || ", TeXForm[Gn2]}]]
     Text[Row[{"Gn2 error || ", Gn2err}]]
     Text[Row[{"Gn2 error || ", TeXForm[Gn2err]}]]
```

Out[50]= $M \parallel 1$

Out[51]= $M \parallel 1$

Out[53]= $M \ error \ || \ -\frac{k^2 \ dx^2}{24} - \frac{7 \ k^4 \ dx^4}{5760} + O[dx]^5$

Out[54]=

Out[55]= $Rm \parallel 1$

Out[56]= $Rm \parallel 1$

Out[57]= Rm error $|| -\frac{1}{2} i k dx + \frac{k^2 dx^2}{12} + \frac{k^4 dx^4}{720} + O[dx]^5$

Out[59]=

Out[60]= $Rp \mid \mid e^{i dx k}$

Out[61]= $Rp \parallel e^{i \cdot text} dx \ k$

Out[62]= Rp error $\|\frac{i k dx}{2} - \frac{5 k^2 dx^2}{12} - \frac{1}{6} i k^3 dx^3 + \frac{31 k^4 dx^4}{720} + O[dx]^5$

Out[63]= Rp error $\| \frac{i \det\{dx\} k}{2} - \frac{5 \det\{dx\}^2}{2}$

 $k^2_{12}-\frac{1}{6} i \text{ } k^3 +\frac{31 \text{ } 4 k^4}{720}+O\left(\frac{4x}^5\right) + \frac{4x^5}{12} -\frac{1}{6} i \text{ } k^2 + \frac{1}{6} i \text{ } k^3 + \frac{31 \text{ } 4 k^4}{720} + O\left(\frac{4x}{6}\right) + O\left(\frac{4x}{6}$

Out[64]=

Out[65]=
$$GG2 \parallel \frac{1+e^{i dx k}}{2\left(H-\frac{2H^3(-1+Cos[dx k])}{3dx^2}\right)}$$

$$\text{Out}_{[67]} = GG2 \ error \ || \ \frac{\left(-6\,k^2-H^2\,k^4\right) dx^2}{4\,H\left(3+H^2\,k^2\right)^2} - \frac{i\left(6\,k^3+H^2\,k^5\right) dx^3}{8\,H\left(3+H^2\,k^2\right)^2} + \frac{\left(144\,k^4+45\,H^2\,k^6+4\,H^4\,k^8\right) dx^4}{240\,H\left(3+H^2\,k^2\right)^3} - \frac{i\left(-54\,k^5+H^4\,k^9\right) dx^5}{480\,H\left(3+H^2\,k^2\right)^3} + O[dx]^6 + O[$$

Out[68]= GG2 error |

 $\label{eq:left} $$ \frac{dx}^2 \left(-H^2 k^4-6 k^2\right)}{4 H\left(-H^2 k^2+3\right)^2}-\frac{i \left(-H^2 k^5+6 k^2\right)}{4 H\left(-H^2 k^5+6 k^2\right)^2}-\frac{i \left(-H^2 k^5+6 k^2\right)}{4 H\left(-H^2 k^5+6 k^2\right)^2}-\frac{i \left(-H^2 k^5+6 k^2\right)^2}{4 H\left(-H^2 k^2\right)^2}-\frac{i \left(-H^2 k^5+6 k^2\right)^2}{4 H\left(-H^2 k^5+6 k^2\right)^2}-\frac{i \left(-H^2 k^5+6 k^2\right)^2}{4 H\left(-H^2 k^5+6 k^2\right)^2}-\frac{i \left(-H^2 k^5+6 k^2\right)^2}{4 H\left(-H^2 k^5+6 k^2\right)^2}+\frac{i \left(-H^2 k^5+6 k^2\right)^2}{4 H\left(-H^2 k^5+6 k^2\right)^2}+\frac{i \left(-H^2 k^5+6 k^2\right)^2}{4 H\left(-H^2 k^5+6 k^2\right)^2}+\frac{i \left(-H^2 k^2 k^2\right)^2}{4 H\left(-H^2 k^2\right)^2}+\frac{i \left(-H^2 k^2 k^2\right)^2}{4 H\left(-H^2$ $k^3\right){8 H \left(H^2 k^2+3\right)^2}+\frac{dx}^4 \left(H^4 k^8+45 H^2\right)$ $k^6+144 k^4\right)$ {240 H \left(H^2 k^2+3\right)^3}-\frac{i \text{dx}^5 \left(H^4)} $k^9-54\ k^5\right]\{480\ H\ \left(H^2\ k^2+3\right)^3\}+O\left(\left(text\{dx\}^6\right)^3\}+O\left(text\{dx\}^6\right)^3\}+O\left(text\{dx\}^6\right)^3\}+O\left(text\{dx\}^6\right)^3\}+O\left(text\{dx\}^6\right)^3\}+O\left(text\{dx\}^6\right)^3\}+O\left(text\{dx\}^6\right)^3\}+O\left(text\{dx\}^6\right)^3$

Out[69]=

Out[70]=
$$Gn2 \mid \mid -\frac{(1+e^{i\,dx\,k})\,U}{2\left(H-\frac{2\,H^3\,(-1+Cos[dx\,k])}{3\,dx^2}\right)}$$

 $Out[71] = Gn2 \parallel -\frac{U \left(1 + e^{i \left(x\right) k}\right)}{2 \left(1 + e^{i \left(x\right) k}\right)} \left(1 + e^{i \left(x\right) k}\right) \left(1 + e^{i \left(x\right)$

```
\frac{\left(6\,k^{2}+H^{2}\,k^{4}\right)\,U\,dx^{2}}{4\,H\left(3+H^{2}\,k^{2}\right)^{2}}+\frac{i\left(6\,k^{3}+H^{2}\,k^{5}\right)\,U\,dx^{3}}{8\,H\left(3+H^{2}\,k^{2}\right)^{2}}-\frac{\left(\left(144\,k^{4}+45\,H^{2}\,k^{6}+4\,H^{4}\,k^{8}\right)\,U\right)dx^{4}}{240\left(H\left(3+H^{2}\,k^{2}\right)^{3}\right)}+\frac{i\left(-54\,k^{5}+H^{4}\,k^{9}\right)\,U\,dx^{5}}{480\,H\left(3+H^{2}\,k^{2}\right)^{3}}+O[dx]^{6}
Out[72]= Gn2 error ||
Out[73]= Gn2 error |
                  k^5+6 k^3 \right) \{8 H \left( h^2 k^2+3 \right)^2 - \frac{4 \left( U \left( h^4 k^8+45 \right)^4 \right)^2}{2} \right) \}
                           H^2 k^6+144 k^4 \right) + \frac{1}{240} \left( H \left( H^2 k^2 + 3 \right)^3 \right) + \frac{1}{240} \left( H^2 k^2 + 3 \right)^3 \right) + \frac{1}{240} \left( H^2 k^2 + 3 \right)^3 \right) + \frac{1}{240} \left( H^2 k^2 + 3 \right)^3 \left( H^2 k^2 + 3 \right)^3 \right) + \frac{1}{240} \left( H^2 k^2 + 3 \right)^3 \left( H^2 k
                            U \left( \frac{480 \text{ H} \left( \frac{480 \text{ H}}{6} \right)^3}{480 \text{ H} \left( \frac{480 \text{ H}}{6} \right)^3} + O\left( \frac{480 \text{ H}}{6} \right)^3} \right) 
 ln[74] = KurF = (fm*ap - fp*am + am*ap*(qp - qm)) / (ap - am);
              KurFWS = KurF /. ap \rightarrow (U + Sqrt[g * H]) /. am \rightarrow (U - Sqrt[g * H]);
              KurFWSeta =
                     KurFWS /. fp \rightarrow (H * v + U * Rpp * n) /. fm \rightarrow (H * v + U * Rmp * n) /. qp \rightarrow Rpp * n /.
                         qm \rightarrow Rmp * n;
              KurFWSeta = KurFWSeta / . v \rightarrow (GGp * G + Gnp * n);
              Kfnnp = FullSimplify[KurFWSeta /. G \rightarrow 0 /. n \rightarrow 1];
              KfnGp = FullSimplify[KurFWSeta /. n \rightarrow 0 /. G \rightarrow 1];
              Kfnn = Kfnnp /. Rpp → Rp /. Rmp → Rm /. GGp → GG2 /. Gnp → Gn2;
              KfnG = KfnGp /. Rpp → Rp /. Rmp → Rm /. GGp → GG2 /. Gnp → Gn2;
              Fnn2 = -dt * (1 - Exp[-I * k * dx]) / dx * Kfnn;
              Fnn2TA = Series[Fnn2 - FnnA, {dx, 0, 3}, {dt, 0, 3}];
              Fnn2TAr = Refine[Fnn2TA, \{k > 0, U > 0, H > 0, g > 0\}];
              FnG2 = -dt * (1 - Exp[-I * k * dx]) / dx * KfnG;
              FnG2TA = Series[FnG2 - FnGA, {dx, 0, 3}, {dt, 0, 3}];
              FnG2TAr = Refine[FnG2TA, \{k > 0, U > 0, H > 0, g > 0\}];
              \texttt{KurFWSG} = \texttt{KurFWS} \ / \ . \ \texttt{fp} \ \rightarrow \ (\texttt{U} * \texttt{Rpp} * \texttt{G} \ + \ \texttt{U} * \texttt{H} * \texttt{v} \ + \ \texttt{g} * \texttt{H} * \texttt{Rpp} * \texttt{n}) \ / \ .
                               fm \rightarrow (U*Rmp*G + U*H*v + g*H*Rmp*n) /. qp \rightarrow Rpp*G /. qm \rightarrow Rmp*G;
              KurFWSG = KurFWSG / . v \rightarrow (GGp * G + Gnp * n);
              KfGnp = FullSimplify[KurFWSG /. G \rightarrow 0 /. n \rightarrow 1];
              KfGGp = FullSimplify[KurFWSG /. n \rightarrow 0 /. G \rightarrow 1];
              KfGn = KfGnp / . Rpp → Rp / . Rmp → Rm / . GGp → GG2 / . Gnp → Gn2;
              \texttt{KfGG} \; = \; \texttt{KfGGp} \; / \; . \; \mathsf{Rpp} \; \rightarrow \; \mathsf{Rp} \; \; / \; . \; \; \mathsf{Rmp} \; \rightarrow \; \mathsf{Rm} \; \; / \; . \; \; \mathsf{GGp} \; \rightarrow \; \mathsf{GG2} \; \; / \; . \; \; \mathsf{Gnp} \; \rightarrow \; \mathsf{Gn2} \; ;
              FGn2 = -dt * (1 - Exp[-I * k * dx]) / dx * KfGn;
              FGn2TA = Series[FGn2 - FGnA, {dx, 0, 3}, {dt, 0, 3}];
              FGn2TAr = Refine[FGn2TA, \{k > 0, U > 0, H > 0, g > 0\}];
               fGG2 = U * H * GG2 + U / 2 * (Rm + Rp) - (Sqrt[g * H]) / (2) * (Rp - Rm);
              FGG2 = -dt * (1 - Exp[-I * k * dx]) / dx * KfGG;
              FGG2TA = Series[FGG2 - FGGA, {dx, 0, 4}, {dt, 0, 3}];
              FGG2TAr = Refine[FGG2TA, \{k > 0, U > 0, H > 0, g > 0\}];
              Fmat2 = {{Fnn2, FnG2}, {FGn2, FGG2}};
              Emat2 = IdentityMatrix[2] + Fmat2;
              Eerr = Series[Emat2 - Exp[-I * wAp * dt] * IdentityMatrix[2], {dx, 0, 4}, {dt, 0, 4}];
```

```
EigvFmat2 = Eigenvalues[Fmat2];
     RKStep = Log[1 + EigvFmat2] / (I * dt);
     RKstepTay = Series[RKStep, {dx, 0, 4}, {dt, 0, 4}];
     RKstepTayr = Simplify[-RKstepTay - \{wAp, wAm\}, \{k > 0, H > 0, g > 0, U > 0\}];
     Text[Row[{" -Sqrt(gH) < U < Sqrt(gH)"}]]</pre>
     Text[" "]
     Text[Row[{"Fnn || ", Kfnnp}]]
     Text[Row[{"Fnn || ", TeXForm[Kfnnp]}]]
     Text[Row[{"Fnn error ||
                                ", Fnn2TAr}]]
     Text[Row[{"Fnn error || ", TeXForm[Fnn2TAr]}]]
     Text[" "]
     Text[Row[{"FnG || ", KfnGp}]]
     Text[Row[{"FnG || ", TeXForm[KfnGp]}]]
     Text[Row[{"FnG error || ", FnG2TAr}]]
     Text[Row[{"FnG error || ", TeXForm[FnG2TAr]}]]
     Text[" "]
     Text[Row[{"FGn || ", KfGnp}]]
     Text[Row[{"FGn || ", TeXForm[KfGnp]}]]
     Text[Row[{"FGn error || ", FGn2TAr}]]
     Text[Row[{"FGn error || ", TeXForm[FGn2TAr]}]]
     Text[" "]
     Text[Row[{"FGG ||
                          ", KfGGp}]]
     Text[Row[{"FGG || ", TeXForm[KfGGp]}]]
     Text[Row[{"FGG error || ", FGG2TAr}]]
     Text[Row[{"FGG error || ", TeXForm[FGG2TAr]}]]
     Text[" "]
     Text[" "]
     Text[Row[{"Omega error || ", RKstepTayr}]]
     Text[Row[{"Omega error || ", TeXForm[RKstepTayr]}]]
     Text[" "]
     Text[Row[{"EA ||
                        ", EA}]]
     Text[Row[{"EA || ", TeXForm[EA]}]]
     Text[Row[{"Eerr || ", Eerr}]]
     Text[Row[{"Eerr || ", TeXForm[Eerr]}]]
Out[108]= -Sqrt(gH) < U < Sqrt(gH)
Out[109]=
```

$$\text{Out[110]=} \quad Fnn \quad || \quad \frac{1}{2} \left(2 \; Gnp \; H + Rpp \left(-\sqrt{g \; H} \right. \right. + U \right) + Rmp \left(\sqrt{g \; H} \right. + U \right) \right)$$

 $\label{eq:output} \begin{tabular}{ll} $$ Output = Fnn & \frac{1}{2} \left(\frac{1}{2} \left(\frac{Rmp}{ett(sqrt\{g H}+U\right)) + \frac{Rmp}{ett(u-sqrt\{g H}+u)} \right) + \frac{1}{2} \left(\frac{1}{2} \left(\frac{1}{2} \left(\frac{1}{2} \right) + \frac{1}{2} \left(\frac{1}{2} \left(\frac{1}{2} \left(\frac{1}{2} \right) + \frac{1}{2} \left(\frac{1}{2} \left(\frac{1}{2} \left(\frac{1}{2} \right) + \frac{1}{2} \left(\frac{1$

$$\begin{array}{ll} \text{Out} \text{[112]=} & Fnn \; error \; \mid \mid \; \left(-\frac{\left(H^2 \; k^3 \; U \; w \right) \; dt^2}{2 \left(3 + H^2 \; k^2 \right)} - \frac{i \; H^2 \; k^3 \; U \; w^2 \; dt^3}{6 \left(3 + H^2 \; k^2 \right)} + O[dt]^4 \right) + \left(-\frac{1}{2} \left(\sqrt{\; g \; H} \; \; k^2 \right) dt + O[dt]^4 \right) dx \; + \\ & \left(\frac{i \left(9 \; H^2 \; k^5 + 2 \; H^4 \; k^7 \right) \; U \; dt}{12 \left(3 + H^2 \; k^2 \right)^2} + O[dt]^4 \right) dx^2 \; + \left(\frac{1}{24} \; \sqrt{\; g \; H} \; \; k^4 \; dt + O[dt]^4 \right) dx^3 \; + O[dx]^4 \\ \end{array}$$

Out[113]= Fnn error |

 $\label{left-frac} $\left(\frac{t}^2 \left(\frac{t}^2 \left(\frac{t}^2 k^3 U \right)}{2 \left(\frac{t}^2 k^2 + 3\right)} - \frac{t}^3 U \right)} - \frac{t}^3 U \right) \\ \left(\frac{t}^2 k^2 + 3\right) + O\left(\frac{t}^4 k^3 U \right) \\ \left(\frac{t}^4 k^2 + 3\right) + O\left(\frac{t}^4 k^3 U \right) + \frac{t}^2 k^2 \left(\frac{t}^4 k^2 + 3\right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^2 k^3 U \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 k^3 U \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 k^3 U \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 k^3 U \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 k^3 U \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 k^3 U \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 k^3 U \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 k^3 U \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 k^3 U \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 k^3 U \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^2 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^4 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^4 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^4 + 3\right) + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^4 + 3\right) + \frac{t}^4 u + \frac{t}^4 u \right) \\ \left(\frac{t}^4 k^4 + 3\right) + \frac{t}^4 u + \frac{t}^4 u$

Out[114]=

Out[115]= FnG || GGp H

Out[116]= $FnG \parallel \text{text}\{GGp\} H$

$$\text{Out} \text{[117]=} \quad FnG \; error \; \mid \mid \; \left(-\frac{3 \; (k \; w) \; dt^2}{2 \; (3 + H^2 \; k^2)} - \frac{i \; k \; w^2 \; dt^3}{2 \; (3 + H^2 \; k^2)} + O[dt]^4 \right) \\ + \left(\frac{i \; (6 \; k^3 + H^2 \; k^5) \; dt}{4 \; (3 + H^2 \; k^2)^2} + O[dt]^4 \right) dx^2 \\ + O[dx]^4 + O[dx$$

 $\label{eq:continuous} $$ \operatorname{FnG error} \| \left(-\frac{3 \text{dt}}^2 (k w)}{2 \left(\frac{4 v}{2 k^2+3\right)}-\frac{i \text{dt}}^3 k w^2}{2 \left(\frac{4 v}{4 v}\right)} + \operatorname{ch}(\frac{4 v}{2 k^2+3\right)} - \operatorname{ch}(\frac{4 v}{2 k^2+3\right)} + \operatorname{ch}(\frac{4 v}{4 v}) + \operatorname{ch}(\frac{4 v}{4 v})$

Out[119]=

$$\text{Out[120]=} \quad FGn \quad || \quad \frac{1}{2} \left(g \; H \; (Rmp + Rpp) + \left(2 \; Gnp \; H + \sqrt{g \; H} \; \; (Rmp - Rpp) \right) U \right)$$

Out[121]= $FGn \parallel$

$$\begin{array}{l} \text{Out} \text{[122]=} \quad FGn \; error \; || \; \left(-\frac{\left(k \left(3 \, g \, H + g \, H^3 \, k^2 - 3 \, U^2 \right) w \right) dt^2}{2 \left(3 + H^2 \, k^2 \right)} - \frac{i \, k \left(3 \, g \, H + g \, H^3 \, k^2 - 3 \, U^2 \right) w^2 \, dt^3}{6 \left(3 + H^2 \, k^2 \right)} + O[dt]^4 \right) + \left(-\frac{1}{2} \left(\sqrt{g \, H} \; \; k^2 \, U \right) dt + O[dt]^4 \right) dx \\ + \left(\frac{i \left(18 \, g \, H \, k^3 + 12 \, g \, H^3 \, k^5 + 2 \, g \, H^5 \, k^7 - 18 \, k^3 \, U^2 - 3 \, H^2 \, k^5 \, U^2 \right) dt}{12 \left(3 + H^2 \, k^2 \right)^2} + O[dt]^4 \right) dx^2 \\ + \left(\frac{1}{24} \sqrt{g \, H} \; k^4 \, U \, dt + O[dt]^4 \right) dx^3 + O[dx]^4 \\ \end{array}$$

Out[123]= FGn error ||

 $\label{left} $$\left(-\frac{\det(t)^2 \left(t + \frac{t}^2 \left(t + \frac{t}^2 \right)^2 \left(t +$

Out[124]=

Out[125]= FGG
$$\parallel \frac{1}{2} \left(\sqrt{g H} Rmp - \sqrt{g H} Rpp + (2 GGp H + Rmp + Rpp) U \right)$$

 $\label{eq:continuous} $\operatorname{FGG} \parallel \frac{1}{2} \left(\operatorname{Rmp} \right) \right] + U(2 \operatorname{CGP} H+\operatorname{Rmp}+\operatorname{Rmp}) \right) $\operatorname{Continuous} (2 \operatorname{Rmp} + \operatorname{$

$$\begin{array}{ll} \text{Out} \text{[127]=} & FGG \; error \; || \; \left(-\frac{\left(k \left(6 + H^2 \, k^2 \right) U \, w \right) \, dt^2}{2 \left(3 + H^2 \, k^2 \right)} - \frac{i \, k \left(6 + H^2 \, k^2 \right) U \, w^2 \, dt^3}{6 \left(3 + H^2 \, k^2 \right)} + O[dt]^4 \right) \, + \\ & \left(-\frac{1}{2} \left(\sqrt{g \, H} \; \; k^2 \right) dt + O[dt]^4 \right) dx \, + \left(\frac{i \left(36 \, k^3 \, U + 15 \, H^2 \, k^5 \, U + 2 \, H^4 \, k^7 \, U \right) \, dt}{12 \left(3 + H^2 \, k^2 \right)^2} + O[dt]^4 \right) dx^2 \, + \\ & \left(\frac{1}{24} \, \sqrt{g \, H} \; \; k^4 \, dt + O[dt]^4 \right) dx^3 \, + \left(-\frac{i \left(108 \, k^3 \, U + 54 \, H^2 \, k^7 \, U + 17 \, H^4 \, k^9 \, U + 2 \, H^6 \, k^{11} \, U \right) dt}{240 \left(3 + H^2 \, k^2 \right)^3} + O[dt]^4 \right) dx^4 \, + O[dx]^5 \end{array}$$

Out[128]= FGG error ||

 $\left(-\frac{t}{2 \ker\{dt\}^2 \left(H^2 k^2+6\right)}}{2 \ker\{dt\}^2 \left(H^2 k^2+6\right)}}{2 \ker\{dt\}^3 k U w^2 + h^2 \left(H^2 k^2+3\right)}$ $\left(H^2 k^2+6\right)\right)$ $\left(\frac{dt}{dt}\right) \left(\frac{dt}{dt}\right) \left(\frac{dt}{dt}\right)$ $H^2 U k^5 + 36 U k^3 \right) \left(\frac{4^2 k^2 + 3\right)^2}{+0} \left(\frac{dt}^4 \right) \left(\frac{dt}^4 \right) \left(\frac{dt}^4 \right) \left(\frac{dt}^3 \right) \right) \left(\frac{dt}^3 \right) \left($ $\left(\frac{1}{24} \right) + k^4 \left(\frac{dt}{-0}\right) + \left(\frac{dt}{-4}\right) + k^4 \left(\frac{dt}{$ \left(-\frac\i \left(2 H^6 U k^\{11\}+17 H^4 U k^9+54 H^2 U k^7+108 U k^5\right) $\text{text}_{dt}^{240} \left(\frac{H^2 k^2+3\right)^3}+O\left(\frac{dt}^4\right)\right) + O\left(\frac{dt}^4\right) + O\left(\frac{dt}^4\right)$

Out[129]=

Out[130]=

Out[131]= Omega error ||
$$\left\{ \frac{i \left[\sqrt{3} \text{ k} \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, \text{k}^2)} \right] + 3 \, \text{k} \, \text{U} + \text{H}^2 \, \text{k}^2 \, \text{U}}{2 \, (3 + \text{H}^2 \, \text{k}^2)^2} - \frac{1}{3 \, (3 + \text{H}^2 \, \text{k}^2)^2} \right. \\ \left. \left(k^3 \left(\sqrt{3} \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, \text{k}^2)} \right) + \left(3 + \text{H}^2 \, \text{k}^2 \right) \, \text{U} \right) \left(3 \, g \, \text{H} + \text{U} \, \left(2 \sqrt{3} \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, \text{k}^2)} \right) + \left(3 + \text{H}^2 \, \text{k}^2 \right) \, \text{U} \right) \right) dt^2 - \\ \frac{1}{4 \, (3 + \text{H}^2 \, \text{k}^2)^3} i \, k^4 \left(\sqrt{3} \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, \text{k}^2)} \right) + \left(3 + \text{H}^2 \, \text{k}^2 \right) \, \text{U} \right) \left(3 \, g \, \left(\sqrt{3} \, \text{H} \, \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, \text{k}^2)} \right) + 9 \, \text{H} \, \text{U} + 3 \, \text{H}^3 \, \text{k}^2 \, \text{U} \right) + \\ U^2 \left(H^4 \, k^4 \, \text{U} + 9 \left(\sqrt{3} \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, \text{k}^2)} \right) + \left(3 + \text{H}^2 \, \text{k}^2 \right) \, \text{U} \right) + 3 \, k^2 \left(\sqrt{3} \sqrt{g \, \text{H}^5 \, (3 + \text{H}^2 \, \text{k}^2)} \right) + 2 \, H^2 \, \text{U} \right) \right) \right) dt^3 + \\ \frac{1}{5 \, (3 + \text{H}^2 \, k^2)^3} k^5 \left(\sqrt{3} \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, k^2)} \right) + \left(3 + \text{H}^2 \, k^2 \right) \, \text{U} \right) \\ \left(9 \, g^2 \, H^2 + 6 \, g \, \text{H} \, \text{U} \left(2 \sqrt{3} \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, k^2)} \right) + 3 \, (3 + \text{H}^2 \, k^2) \, \text{U} \right) + \\ U^3 \left(12 \, \sqrt{3} \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, k^2)} \right) + 9 \, \text{U} + H^4 \, k^4 \, \text{U} + 2 \, k^2 \left(2 \sqrt{3} \sqrt{g \, \text{H}^5 \, (3 + \text{H}^2 \, k^2)} \right) + 3 \, H^2 \, \text{U} \right) \right) \right) dt^4 + \\ O[\text{dt}]^5 \right) + \left(-\frac{1}{4} \, i \, k^2 \left(2 \sqrt{g \, \text{H}} + \frac{\sqrt{3} \, \text{U}}{\sqrt{3 + \text{H}^2 \, k^2}} \right) + \sqrt{3} \, \text{U} \right) \left(3 \, g \, \text{H} + \text{U} \left(2 \, \sqrt{3} \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, k^2)} \right) + \left(3 + \text{H}^2 \, k^2 \right) \, \text{U} \right) \right) dt^4 + \\ \frac{1}{4 \, (3 + \text{H}^2 \, k^2)^{3/2}} i \, k^4 \left(2 \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, k^2)} \right) + \sqrt{3} \, \text{U} \right) \left(3 \, g \, \text{H} + \text{U} \left(2 \sqrt{3} \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, k^2)} + (3 + \text{H}^2 \, k^2) \, \text{U} \right) \right) dt^2 - \\ \frac{1}{4 \, (3 + \text{H}^2 \, k^2)^{3/2}} i \, k^4 \left(2 \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, k^2)} \right) + \sqrt{3} \, \text{U} \right) \left(3 \, g \, \text{H} + \text{U} \left(2 \sqrt{3} \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, k^2)} \right) + (3 + \text{H}^2 \, k^2) \, \text{U} \right) \right) dt^2 - \\ \frac{1}{4 \, (3 + \text{H}^2 \, k^2)^{3/2}} i \, k^4 \left(2 \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, k^2)} \right) + \sqrt{3} \, \text{U} \right)$$

$$\begin{split} &U^2\left(H^4\,k^4\,U + 9\left(\sqrt{3}\,\sqrt{g\,H}\left(3 + H^2\,k^2\right) + U\right) + 3\,k^2\left(\sqrt{3}\,\sqrt{g\,H^3}\left(3 + H^2\,k^2\right) + 2\,H^2\,U\right)\right)\right)\right)\\ &dt^3 - \frac{1}{4(3 + H^2\,k^2)^2}\,k^6\left(2\,\sqrt{g\,H}\left(3 + H^2\,k^2\right) + \sqrt{3}\,U\right)\\ &\left(9\,g^2\,H^2 + 6\,g\,H\,U\left(2\,\sqrt{3}\,\sqrt{g\,H}\left(3 + H^2\,k^2\right) + 9\,U + H^4\,k^4\,U + 2\,k^2\left(2\,\sqrt{3}\,\sqrt{g\,H^5}\left(3 + H^2\,k^2\right) + 3\,H^2\,U\right)\right)\right)\right)dt^4 + \\ &U^3\left(12\,\sqrt{3}\,\sqrt{g\,H}\left(3 + H^2\,k^2\right) + 9\,U + H^4\,k^4\,U + 2\,k^2\left(2\,\sqrt{3}\,\sqrt{g\,H^5}\left(3 + H^2\,k^2\right) + 3\,H^2\,U\right)\right)\right)dt^4 + \\ &\left(0\,dU^3\right)^3dx + \left(-\left(\left(k^3\left(12\,\sqrt{3}\,g\,H\left(4 + H^2\,k^2\right) + 9\,U + H^4\,k^4\,U + 2\,k^2\left(2\,\sqrt{3}\,\sqrt{g\,H^5}\left(3 + H^2\,k^2\right) + 3\,H^2\,U\right)\right)\right)\right)dt^4 + \\ &\left(k^2\left(16\,\sqrt{g\,H^3}\left(3 + H^2\,k^2\right) - 3\,\sqrt{3}\,U\right) + k^4\,U^2\left(16\,\sqrt{g\,H^3}\left(3 + H^2\,k^2\right) - 3\,\sqrt{3}\,U^4\right) + \\ &\left(k^2\left(16\,\sqrt{g\,H^3}\left(3 + H^2\,k^2\right) + 16\,\sqrt{g\,H^2}\left(3 + H^2\,k^2\right) - 3\,\sqrt{3}\,U^2\right)\right) + \\ &\left(4\,g\,H\left(63\,\sqrt{g\,H}\left(3 + H^2\,k^2\right) + 99\,\sqrt{3}\,U + 63\,\sqrt{3}\,H^2\,k^2\right) + \\ &\left(k^3\left(12\,\sqrt{3}\,g^2\,H^3\left(3 + H^2\,k^2\right) + 10\,\sqrt{3}\,H^4\,U\right)\right)\right)dt\right) / \left(96\,\sqrt{g\,H}\,\left(3 + H^2\,k^2\right)^{5/2}\right) + \\ &\left(k^3\left(16\,\sqrt{g\,H^3}\left(3 + H^2\,k^2\right) + 10\,\sqrt{3}\,H^4\,U\right)\right)dt\right) + \\ &\left(k^3\left(16\,\sqrt{g\,H^3}\left(3 + H^2\,k^2\right) + 10\,\sqrt{3}\,H^4\,U\right)\right)dt\right) + \\ &\left(k^3\left(16\,\sqrt{g\,H^3}\left(3 + H^2\,k^2\right) + 10\,\sqrt{3}\,H^4\,U\right)\right)dt^2\right) / \left(96\,\sqrt{g\,H}\,\left(3 + H^2\,k^2\right)^{5/2}\right) + \\ &\left(k^3\left(16\,\sqrt{g\,H^3}\left(3 + H^2\,k^2\right) + 17\,\sqrt{3}\,H^4\,U\right)\right)dt^2\right) / \left(96\,\sqrt{g\,H}\,\left(3 + H^2\,k^2\right)^{5/2}\right) + \\ &\left(k^3\left(6\,\sqrt{g\,H^3}\left(3 + H^2\,k^2\right) + 17\,\sqrt{3}\,H^4\,U\right)\right)dt^2\right) / \left(96\,\sqrt{g\,H}\,\left(3 + H^2\,k^2\right)^{5/2}\right) + \\ &\left(4\,H^4\left(6\,\sqrt{g\,H^3}\left(3 + H^2\,k^2\right) + 17\,\sqrt{3}\,H^4\,U\right)\right)dt^2\right) / \left(96\,\sqrt{g\,H}\,\left(3 + H^2\,k^2\right)^{5/2}\right) + \\ &\left(4\,H^4\left(6\,\sqrt{g\,H^3}\left(3 + H^2\,k^2\right) + 17\,\sqrt{3}\,H^4\,U\right)\right)dt^2\right) / \left(96\,\sqrt{g\,H}\,\left(3 + H^2\,k^2\right)^{5/2}\right) + \\ &\left(27\left(2\,\sqrt{g^2\,H^3}\left(3 + H^2\,k^2\right) + 17\,2\,\sqrt{3}\,g^2H^2\,U + 404\,\sqrt{3}\,g^2H^4\,U + 438\,\sqrt{g^3\,H^7}\left(3 + H^2\,k^2\right)}\right)U^2 + \\ &\left(27\left(2\,\sqrt{g^2\,H^3}\left(3 + H^2\,k^2\right) + 104\,\sqrt{3}\,g^2H^0\,U + 48\,\sqrt{g\,H^3}\left(3 + H^2\,k^2\right)}\right)U^4 - \\ &\left(3\,\sqrt{g\,H^3}\left(3 + H^2\,k^2\right) + 304\,\sqrt{3}\,g^2H^0\,U + 48\,\sqrt{g\,H^3}\left(3 + H^2\,k^2\right)}\right)U^4 - \\ &\left(9\,\sqrt{3}\,H^3\left(3 + H^2\,k^2\right) + 304\,\sqrt{3}\,g^2H^0\,U + 48\,\sqrt{g\,H^3}\left(3 + H^2\,k^2\right)}\right)U^4 - \\ &\left(16\,\sqrt{g\,H^3}\left(3 + H^2\,k^2\right) + 304\,\sqrt{3}\,g^2H^0\,U + 48\,\sqrt{g\,H^3}\left($$

$$3k^4 \left(216\sqrt{g\,H^9(3+H^2\,k^2)} + 197\sqrt{3}\,H^3\,U\right) + 2\,k^6 \left(12\sqrt{g\,H^{13}(3+H^2\,k^2)} + 31\sqrt{3}\,H^6\,U\right) + U\left(7344\sqrt{g^5\,H^5(3+H^2\,k^2)} + 432\sqrt{g\,H(3+H^2\,k^2)}\,U^4 - 81\sqrt{3}\,U^5 + k^6\,U^4\left(16\sqrt{g\,H^{13}(3+H^2\,k^2)} + 23\sqrt{3}\,H^6\,U\right) + 9\,k^2\left(400\sqrt{g^3\,H^9(3+H^2\,k^2)} + 760\sqrt{g^3\,H^7(3+H^2\,k^2)}\,U^2 + 48\sqrt{g\,H^5(3+H^2\,k^2)}\,U^4 - 9\sqrt{3}\,H^2\,U^5\right) + 9\,k^4\left(48\sqrt{g^3\,H^{13}(3+H^2\,k^2)} + 16\sqrt{g\,H^9(3+H^2\,k^2)}\,U^4 - 3\sqrt{3}\,H^4\,U^5\right) \right) \right) dt^4 + O[dt]^5 \right) dt^2 + \left(\left[i\,k^4\left(3\sqrt{3}\,(3+H^2\,k^2)\,U^3 + 4\,g\,H\left(12\sqrt{g\,H(3+H^2\,k^2)} + 6\sqrt{3}\,U + k^2\left(4\sqrt{g\,H^5(3+H^2\,k^2)} + \sqrt{3}\,H^2\,U\right)\right)\right) \right) \right) \left(384\,g\,H(3+H^2\,k^2)^{3/2} \right) - \left(\left[k^5\left(8\sqrt{3}\,g^2\,H^2(54 + 33\,H^2\,k^2) + 5\,H^4\,k^4\right) + 3\sqrt{3}\,(3 + H^2\,k^2)^2\,U^4 + 2\,g\,H\,U \right) + k^4\left(24\sqrt{g\,H^9(3+H^2\,k^2)} + \sqrt{3}\,U\right) + 24\,k^2\left(7\sqrt{g\,H^5(3+H^2\,k^2)} + 2\sqrt{3}\,H^2\,U\right) + k^4\left(24\sqrt{g\,H^9(3+H^2\,k^2)} + 7\sqrt{3}\,H^4\,U\right) \right) \right) dt \right) \left/ \left(384\left(g\,H(3+H^2\,k^2)^{3/2}\right) - \left(i\,k^6\left(3\,k^2\left(96\sqrt{g^5\,H^9(3+H^2\,k^2)} + 380\sqrt{3}\,g^2\,H^4\,U + 224\sqrt{g^3\,H^7(3+H^2\,k^2)} + 2\sqrt{3}\,H^2\,U\right) + 2\sqrt{3}\,H^2\,U\right) + k^4\left(24\sqrt{g\,H^9(3+H^2\,k^2)} + 380\sqrt{3}\,g^2\,H^4\,U + 224\sqrt{g^3\,H^7(3+H^2\,k^2)} + 168\sqrt{3}\,g^2\,H^6\,U + 3\sqrt{3}\,g^2\,H^2\,U^3 + 8\,g\,H^3\,U^3 + 6\sqrt{3}\,H^2\,U^3\right) + k^4\left(16\sqrt{g^5\,H^{3/3}(3+H^2\,k^2)} + 168\sqrt{3}\,g^2\,H^6\,U + 3\sqrt{3}\,g^2\,H^2\,U + 3\sqrt{3}\,g^2\,H^2\,U + 3\sqrt{3}\,g^2\,H^3\,U^3 + 4\,g^2\,U^3\right) + 224\sqrt{3}\,g^2\,H^3\,U^3 + 4\,g^2\,U^3\right) + \frac{224\sqrt{3}\,g^2\,H^3\,U^3 + 4\,g^2\,U^3}{3^3\,H^3\,U^3 + 6\sqrt{3}\,g^2\,H^4\,U + 3\sqrt{3}\,U^3 + H^2\,k^2\right) + 4\sqrt{3}\,g^2\,H^3\,U^3 + 2\,g^2\,U^3\right) + \frac{2}{344\,g\,H(3+H^2\,k^2)} + 27\sqrt{3}\,U\right) \right) dt^2\right) / \left(3k^2\,H^3\,(3+H^2\,k^2) + 3\sqrt{3}\,U^3 + 2\,g\,H^3\,U^3 + 4\,g^2\,U^3\right) + \frac{2}{344\,g\,H(3+H^2\,k^2)} + 27\sqrt{3}\,g\,H^3\,U^3 + 4\,g^2\,U^3\right) + 4\sqrt{3}\,u^3 + 2\,g^2\,H^3\,U^3 + 4\sqrt{3}\,u^3\right) + \frac{2}{9}\left(160\sqrt{g^3\,H^3\,(3+H^2\,k^2)} + 3\sqrt{3}\,u^3 + 2\,g\,H^3\,U^3 + 4\sqrt{3}\,u^3\right) + 2\,g\,H^3\,U^3 + 4\sqrt{3}\,u^3 + 2\,g\,H^3\,U^3 + 4\sqrt{3}\,u^3\right) + \frac{2}{344\,g\,H(3+H^2\,k^2)} + 29\sqrt{3}\,U^3\right) dt^3 + 2\,g\,H^3\,U^3 + 2\sqrt{3}\,u^3 + 2\sqrt{3}\,$$

$$\begin{split} & \text{g III U}^* \left([k^5 \left(16 \sqrt{3} \text{ g}^3 \text{ H}^2 \left(144 + 48 \text{ H}^2 \text{ k}^2 + 5 \text{ H}^4 \text{ k}^4 \right) - 75 \sqrt{3} \left(3 + \text{H}^2 \text{ k}^2 \right)^2 \text{ U}^4 + 8 \text{ g H} \left(3 + \text{H}^2 \text{ k}^2 \right)^2 \text{ U} \right) \\ & \left(96 \sqrt{\text{g II} \left(3 + \text{H}^2 \text{ k}^2 \right)} + k^2 \left(32 \sqrt{\text{g II}^3 \left(3 + \text{H}^2 \text{ k}^2 \right)^2} \right) + 5 \sqrt{3} \text{ II}^2 \text{ U} \right) \right) \right) / \\ & \left(30720 \left(\text{g H} \right)^{3/2} \left(3 + \text{H}^2 \text{ k}^2 \right)^{5/2} \right) + \frac{12}{924606 \left(\text{g H}^3 \left(3 + \text{H}^2 \text{ k}^2 \right)} + 5 \sqrt{3} \text{ II}^2 \text{ U} \right) \right) \right) / \\ & \left(30720 \left(\text{g H} \right)^{3/2} \left(3 + \text{H}^2 \text{ k}^2 \right)^{5/2} \right) + \frac{12}{924606 \left(\text{g H}^3 \left(3 + \text{H}^2 \text{ k}^2 \right)} + 16 160 \sqrt{3} \text{ g}^2 \text{ H}^4 \text{ U} + 6144 \sqrt{\text{g}^3 \text{ H}^2 \left(3 + \text{H}^2 \text{ k}^2 \right)} \right) \text{ U}^2 - \\ & 240 \sqrt{3} \text{ g H}^3 \text{ U}^3 - 675 \sqrt{3} \text{ H}^2 \text{ U}^3 \right) + k^6 \left(1920 \sqrt{\text{g}^3 \text{ H}^{17} \left(3 + \text{H}^2 \text{ k}^2 \right)} + 4368 \sqrt{3} \text{ g}^2 \text{ H}^8 \text{ U} + \\ & 2048 \text{ g H}^7 \sqrt{\text{g H} \left(3 + \text{H}^2 \text{ k}^2 \right)} \text{ U}^2 - 225 \sqrt{3} \text{ H}^6 \text{ U}^5 \right) + 27 \left(3968 \sqrt{\text{g}^6 \text{ H}^5 \left(3 + \text{H}^2 \text{ k}^2 \right)} \right) + \\ & 6016 \sqrt{3} \text{ g}^2 \text{ H}^2 \text{ U} - 225 \sqrt{3} \text{ U}^3 + 8 \text{ g H U}^2 \left(256 \sqrt{\text{g H} \left(3 + \text{H}^2 \text{ k}^2 \right)} - 15 \sqrt{3} \text{ U} \right) \right) + \\ & 3 k^4 \left(6720 \sqrt{\text{g}^5 \text{ H}^{1/3} \left(3 + \text{H}^2 \text{ k}^2 \right)} \right) + 14512 \sqrt{3} \text{ g}^2 \text{ H}^9 \text{ U} - 675 \sqrt{3} \text{ II}^4 \text{ U}^5 + \\ & 24 \text{ g H}^3 \text{ U}^2 \left(256 \sqrt{\text{g H} \left(3 + \text{H}^2 \text{ k}^2 \right)} \right) + 14512 \sqrt{3} \text{ g}^2 \text{ H}^9 \text{ U} - 675 \sqrt{3} \text{ II}^4 \text{ U}^5 + \\ & 24 \text{ g H}^3 \text{ U}^2 \left(256 \sqrt{\text{g H} \left(3 + \text{H}^2 \text{ k}^2 \right)} \right) - 5 \sqrt{3} \text{ U} \right) \right) \right) d \text{U} - \\ & \frac{1}{92160 \left(\left(\text{g H}^{1/3} \left(3 + \text{H}^2 \text{ k}^2 \right) \right)} \left(18 \sqrt{3} \text{ g}^3 \text{ H}^3 \left(6192 + 5004 \text{ H}^2 \text{ k}^2 + 1425 \text{ H}^4 \text{ k}^4 + 140 \text{ H}^6 \text{ k}^6 \right) + \\ & \text{g H} \text{ U}^3 \left(89856 \sqrt{\text{g H} \left(3 + \text{H}^2 \text{ k}^2 \right)} - 5 \sqrt{3} \text{ U} \right) \right) d \text{U} - \\ & 15 \sqrt{3} \text{ H}^6 \text{ U}^3 \right) + 3 \text{ U} \left(811 \left(2816 \sqrt{\text{g}^5 \text{ H}^2 \left(3 + \text{H}^2 \text{ k}^2 \right)} \right) - 25 \sqrt{3} \text{ U}^2 \right) + \\ & 3 k^2 \left(52352 \sqrt{\text{g}^3 \text{ H}^3 \left(3 + \text{H}^2 \text{ k}^2 \right)} - 15 \sqrt{3} \text{ H}^4 \text{ U}^3 \right) + 8 k^6 \left(416 \sqrt{\text{g} \text{ H}^{1/3} \left(3 + \text$$

$$\begin{array}{c} 9888\sqrt{3} \ g^2H^{10}U^3 - 75\sqrt{3} \ H^8U^7 + 16 gH^9U^4 \Big(96\sqrt{gH(3+H^2k^2)} - 5\sqrt{3} \ U\Big)\Big)dt^3 + \\ \frac{1}{92160(gH)^{10}(5+H^2k^2)^2}k^2 \Big(144\sqrt{3} \ g^4H^2 (23832 + 22104H^2k^2 + 7395H^4k^4 + 1000H^6k^6 + 40H^8k^8) + \\ 24\sqrt{3} \ g^3H^3 (893700 + 953451H^2k^2 + 376029H^4k^4 + 64744H^6k^6 + 4080H^8k^8)U^2 + \\ 3\sqrt{3} \ g^3H^3 (893700 + 953451H^2k^2) - 8505\sqrt{3} \ U - 13365\sqrt{3} \ H^2k^2 U + \\ 2gHU^3 \Big(238464\sqrt{gH(3+H^2k^2)} - 8505\sqrt{3} \ U - 13365\sqrt{3} \ H^2k^2 U + \\ 27k^4 \Big(5888\sqrt{gH^9(3+H^2k^2)} - 2855\sqrt{3} \ H^4U \Big) + 3k^6 \Big(11776\sqrt{gH^{13}(3+H^2k^2)} - 645\sqrt{3} \ H^6U \Big) + 4k^8 \Big(736\sqrt{gH^{17}(3+H^2k^2)} - 45\sqrt{3} \ H^8U \Big) \Big) + \\ 3U\Big(135\Big(33920\sqrt{g^7H^7(3+H^2k^2)} + 39424\sqrt{g^5H^3(3+H^2k^2)} \ U^2 - 45\sqrt{3} \ U^7 \Big) + \\ 36k^2 \Big(105472\sqrt{g^7H^{11}(3+H^2k^2)} + 144512\sqrt{g^5H^9(3+H^2k^2)} \ U^2 - 45\sqrt{3} \ U^7 \Big) + \\ 18k^4 \Big(60608\sqrt{g^7H^{15}(3+H^2k^2)} + 100096\sqrt{g^8H^{13}(3+H^2k^2)} \ U^2 - 225\sqrt{3} \ H^4U^7 \Big) + \\ 12k^6 \Big(9600\sqrt{g^7H^{19}(3+H^2k^2)} + 2048\sqrt{g^5H^{17}(3+H^2k^2)} \ U^2 - 75\sqrt{3} \ H^6U^7 \Big) + \\ 5k^8 \Big(384\sqrt{g^2H^{23}(3+H^2k^2)} + 2048\sqrt{g^5H^{21}(3+H^2k^2)} \ U^2 - 15\sqrt{3} \ H^8U^7 \Big) \Big) \Big) dt^4 + \\ O[dt]^3 \Big) dx^4 + O[dx]^5, \begin{cases} i \sqrt{3} k\sqrt{gH(H^{14}E^2)} + 3kU + H^2k^2 U \right) \\ 2(3H^{12}E^2)^7 + (3+H^2k^2) + (3+H^2k^2) U \Big) \\ 3gH + U\Big(-2\sqrt{3}\sqrt{gH(3+H^2k^2)} + (3+H^2k^2) U \Big) + \\ U^2\Big(-9\sqrt{3}\sqrt{gH(3+H^2k^2)} + 3(3+H^2k^2) U \Big) + \\ U^3\Big(-\sqrt{3}\sqrt{gH(3+H^2k^2)} + 9U + H^4k^4U - 3k^2\Big(\sqrt{3}\sqrt{gH^5(3+H^2k^2)} - 2H^2U \Big) \Big) dt^4 + O[dt]^5 \Big) + \\ U^3\Big(-12\sqrt{3}\sqrt{gH(3+H^2k^2)} + 9U + H^4k^4U - 4k^2U - 3k^2\Big(\sqrt{3}\sqrt{gH^5(3+H^2k^2)} + 6H^2U \Big) \Big) \Big) dt^4 + O[dt]^5 \Big) + \\ U^3\Big(-12\sqrt{3}\sqrt{gH(3+H^2k^2)} + 9U + H^4k^4U - 4k^2U - 4\sqrt{3}\sqrt{gH^5(3+H^2k^2)} + 6H^2U \Big) \Big) \Big) dt^4 + O[dt]^5 \Big) + \\ U^4\Big(-12\sqrt{3}\sqrt{gH(3+H^2k^2)} + 9U + H^4k^4U - 4k^2U - 4\sqrt{3}\sqrt{gH^5(3+H^2k^2)} + 6H^2U \Big) \Big) \Big) dt^4 + O[dt]^5 \Big) + \\ U^4\Big(-12\sqrt{3}\sqrt{gH(3+H^2k^2)} + 9U + H^4k^4U - 4k^2U - 4\sqrt{3}\sqrt{gH^5(3+H^2k^2)} + 6H^2U \Big) \Big) \Big) dt^4 + O[dt]^5 \Big) + \\ U^4\Big(-12\sqrt{3}\sqrt{gH(3+H^2k^2)} + 9U + H^4k^4U - 4k^2U - 4\sqrt{3}\sqrt{gH^5(3+H^2k^2)} + 6H^2U \Big) \Big) \Big) dt^4 + O[dt]^6 \Big) \Big] dt^4 + O[dt]^6 \Big) +$$

$$\begin{array}{l} -\frac{1}{4}ik^{3}\left(2\sqrt{g\,H}-\frac{\sqrt{3}\,U}{\sqrt{3}i\,H^{2}k^{2}}\right) + \frac{1}{4\left(1+H^{2}k^{2}\right)^{3/2}} + \frac{1}{4\left(1+H^{2}k^{2}\right)^{3/2}}$$

$$27 \left(52 \sqrt{g^{5} H^{3}} \left(3 + H^{2} k^{2} \right) - 172 \sqrt{3} g^{2} H^{2} U + 16 \sqrt{g H} \left(3 + H^{2} k^{2} \right) U^{4} + 3 \sqrt{3} U^{3} + g H U^{2} \left(210 \sqrt{g H} \left(3 + H^{2} k^{2} \right) - 109 \sqrt{3} U \right) \right) - k^{6} U \left(72 \sqrt{3} g^{2} H^{8} + 12 g H^{7} U \left(-3 \sqrt{g H} \left(3 + H^{2} k^{2} \right) - 109 \sqrt{3} U \right) \right) - U^{3} \left(16 \sqrt{g H^{13}} \left(3 + H^{2} k^{2} \right) + 3 \sqrt{3} H^{6} U \right) \right) da^{3} + \frac{1}{99 \sqrt{g H} \left(3 + H^{2} k^{2} \right)^{2}} \right)$$

$$k^{7} \left(36 \sqrt{3} g^{3} H^{3} \left(48 + 27 H^{2} k^{2} + 4 H^{4} k^{4} \right) + 3 \sqrt{3} g^{2} H^{2} \left(4113 + 3075 H^{2} k^{2} + 712 H^{4} k^{4} + 48 H^{6} k^{6} \right) U^{2} + 2 g H U^{3} \left(-5076 \sqrt{g H} \left(3 + H^{2} k^{2} \right) + 1971 \sqrt{3} U + 1872 \sqrt{3} H^{2} k^{2} U + 3 k^{4} \left(-216 \sqrt{g H^{9}} \left(3 + H^{2} k^{2} \right) + 1971 \sqrt{3} U^{4} + 1872 \sqrt{3} H^{2} k^{2} U + 3 k^{4} \left(-16 \sqrt{g H^{9}} \left(3 + H^{2} k^{2} \right) + 432 \sqrt{g H} \left(3 + H^{2} k^{2} \right) U^{4} + 81 \sqrt{3} U^{5} \right) + k^{6} U \left(16 \sqrt{g H^{13}} \left(3 + H^{2} k^{2} \right) + 3 \sqrt{3} H^{6} U \right) \right) - U \left(7344 \sqrt{g^{5}} H^{3} \left(3 + H^{2} k^{2} \right) + 432 \sqrt{g H} \left(3 + H^{2} k^{2} \right) U^{4} + 81 \sqrt{3} U^{5} + k^{6} U^{4} \left(16 \sqrt{g H^{13}} \left(3 + H^{2} k^{2} \right) + 3 \sqrt{3} H^{6} U \right) \right) - 4 k^{6} U \left(16 \sqrt{g H^{13}} \left(3 + H^{2} k^{2} \right) + 3 \sqrt{3} H^{6} U \right) \right) - 4 k^{6} \left(48 \sqrt{g^{5}} H^{13} \left(3 + H^{2} k^{2} \right) + 3 \sqrt{3} H^{6} U \right) \right) - 4 k^{6} \left(48 \sqrt{g^{5}} H^{13} \left(3 + H^{2} k^{2} \right) + 3 \sqrt{3} H^{6} U \right) \right) \right) \right) \left(384 \left(3 + H^{2} k^{2} \right) \right) + 4 \left(48 \sqrt{g^{5}} H^{13} \left(3 + H^{2} k^{2} \right) + 16 \sqrt{g H^{9}} \left(3 + H^{2} k^{2} \right) U^{4} + 3 \sqrt{3} H^{4} U^{5} \right) \right) \right) dt^{4} + O[dt]^{5} \right) dx^{2} + k^{2} \left(4 \sqrt{g H^{9}} \left(3 + H^{2} k^{2} \right) + 3 \sqrt{3} H^{2} U^{2} \right) \right) \right) \left(384 g H \left(3 + H^{2} k^{2} \right)^{3/2} \right) \right) + k^{4} \left(48 \sqrt{g^{6}} H^{13} \left(3 + H^{2} k^{2} \right) - 7 \sqrt{3} H^{4} U \right) \right) \right) \right) \left(384 g H \left(3 + H^{2} k^{2} \right)^{3/2} \right) - 5 \left(16 \sqrt{g H^{9}} \left(3 + H^{2} k^{2} \right) - 7 \sqrt{3} H^{4} U \right) \right) \right) \right) \left(384 g H \left(3 + H^{2} k^{2} \right) - 2 \sqrt{3} H^{2} U - 3 \sqrt{3} \left(3 + H^{2} k^{2} \right) - 3 \sqrt{3} \left(3 + H^{2} k^{2} \right) - 3 \sqrt{3} \left(3 + H^{2} k^{2} \right) - 3 \sqrt{3} \left(3 + H^{2} k^{2$$

272 $\sqrt{3}$ g² H⁶ U - 3 $\sqrt{3}$ H⁴ U⁵ + 2 g H⁵ U² (56 $\sqrt{g$ H (3 + H² k²) - 17 $\sqrt{3}$ U)))) $dt^{3} - \tfrac{1}{384\,g\,H\,\left(3 + H^{2}\,k^{2}\right)^{9/2}}\emph{i}\,\,k^{8}\left(\sqrt{\,3\,}\,\,\sqrt{\,g\,H\left(3 + H^{2}\,k^{2}\right)}\, - \left(3 + H^{2}\,k^{2}\right)\,U\right)^{2}$ $\left(-3 \, k^2 \left(304 \, \sqrt{\,g^5 \, H^9 \left(3+H^2 \, k^2\right)} \right. \right. \\ \left.-884 \, \sqrt{3} \, g^2 \, H^4 \, U + 456 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right. U^2 - \left.-484 \, k^2 \left(304 \, \sqrt{\,g^5 \, H^9 \left(3+H^2 \, k^2\right)} \right) \right] \\ \left.-284 \, \sqrt{3} \, g^2 \, H^4 \, U + 456 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{3} \, g^2 \, H^4 \, U + 456 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{3} \, g^2 \, H^4 \, U + 456 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{3} \, g^2 \, H^4 \, U + 456 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{3} \, g^2 \, H^4 \, U + 456 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{3} \, g^2 \, H^4 \, U + 456 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{3} \, g^2 \, H^4 \, U + 456 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{3} \, g^2 \, H^4 \, U + 456 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{3} \, g^2 \, H^4 \, U + 456 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{3} \, g^2 \, H^4 \, U + 456 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{3} \, g^2 \, H^4 \, U + 456 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{3} \, g^2 \, H^4 \, U + 456 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{3} \, g^2 \, H^4 \, U + 456 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{3} \, g^2 \, H^4 \, U + 456 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-284 \, \sqrt{\,g^3 \, H^7 \left(3+H^2 \, k^2\right)} \right] U^2 - \left.-28$ $95\,\sqrt{3}\,g\,H^3\,U^3 - 6\,\sqrt{g\,H^5\left(3 + H^2\,k^2\right)}\,\,U^4 - 6\,\sqrt{3}\,\,H^2\,U^5\right) 27 \left(80 \; \sqrt{\,g^5 \, H^5 \left(3 + H^2 \, k^2\right)} \; - 168 \; \sqrt{\,3\,} \; g^2 \, H^2 \, U - 2 \; \sqrt{\,g \, H \left(3 + H^2 \, k^2\right)} \; \, U^4 \, - \right.$ $\sqrt{3} \text{ U}^5 + \text{g H U}^2 \left(112 \sqrt{\text{g H} \left(3 + \text{H}^2 \text{k}^2\right)} - 17 \sqrt{3} \text{ U}\right)\right)$ $k^{4} \left(96 \; \sqrt{g^{5} \; H^{13} \left(3 + H^{2} \; k^{2}\right)} \; -400 \; \sqrt{3} \; \; g^{2} \; H^{6} \; U - 3 \; \sqrt{3} \; \; H^{4} \; U^{5} \; + \right.$ $4\,g\,H^5\,U^2 \left(36\,\sqrt{g\,H\left(3+H^2\,k^2\right)}\,-11\,\sqrt{3}\,U\right)\right)\right)dt^4+O[dt]^5\right)dx^3+$ $\left(\left(k^{5}\left(-16\sqrt{3}\ g^{2}\ H^{2}\left(144+48\ H^{2}\ k^{2}+5\ H^{4}\ k^{4}\right)+75\sqrt{3}\ \left(3+H^{2}\ k^{2}\right)^{2}\ U^{4}+8\ g\ H\left(3+H^{2}\ k^{2}\right)U^{2}\right)\right)^{2}\right)^{2}$ $\left(96\,\sqrt{g\,H\left(3+H^{2}\,k^{2}\right)}\,+k^{2}\!\left(32\,\sqrt{g\,H^{5}\left(3+H^{2}\,k^{2}\right)}\,-5\,\sqrt{3}\,H^{2}\,U\right)\right)\right)\right/$ $\left(30\,720\,(g\,H)^{3/2}\left(3+H^2\,k^2\right)^{5/2}\right)+\frac{1}{92\,160\,(g\,H)^{3/2}\,(3+H^2\,k^2)^{7/2}}$ $i\,k^{6} \left(9\,k^{2} \left(8448\,\sqrt{g^{5}\,H^{9} \left(3+H^{2}\,k^{2}\right)}\right.\right.\\ \left.-16\,160\,\sqrt{3}\,g^{2}\,H^{4}\,U+6144\,\sqrt{g^{3}\,H^{7} \left(3+H^{2}\,k^{2}\right)}\right.U^{2}+\left.\left(4448\,\sqrt{g^{3}\,H^{2} \left(3+H^{2}\,k^{2}\right)}\right)\right]U^{2}+\left.\left(4448\,\sqrt{g^{3}\,H^{2} \left(3+H^{2}\,k^{2}\right)}\right)\right]U^{2}+\left.\left(4448\,H^{2} \left(3+H^{2}\,k^{2}\right)\right)\right]U^{2}+\left.\left(4448\,H^{2} \left(3+H^{2}\,k^{2}\right)\right)\right]U^{2}+\left.\left(4444\,H^{2} \left(3+H^{2}\,k^{2}\right)\right)\right]U^{2}+\left.\left(4444\,H^{2} \left(3+H^{2}\,k^{2}\right)\right)$ $240\,\sqrt{3}\,g\,H^3\,U^3+675\,\sqrt{3}\,H^2\,U^5\Big)+k^6\Big(1920\,\sqrt{g^5\,H^{17}\,\big(3+H^2\,k^2\big)}\, 4368\sqrt{3}$ g² H⁸ U + 2048 g H⁷ $\sqrt{g H (3 + H^2 k^2)}$ U² + 225 $\sqrt{3}$ H⁶ U⁵) + $3\;k^{4}\left(6720\;\sqrt{\,g^{5}\,H^{13}\left(3\,+\,H^{2}\,k^{2}\right)}\right.\\ \left.-\,14\,512\;\sqrt{\,3\,}\;g^{2}\,H^{6}\,U\,+\,675\;\sqrt{\,3\,}\;H^{4}\,U^{5}\,+\,4600\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H^{2}\,H$ $24 g H^5 U^2 \left(256 \sqrt{g H \left(3 + H^2 k^2\right)} + 5 \sqrt{3} U\right)\right) + 27 \left(3968 \sqrt{g^5 H^5 \left(3 + H^2 k^2\right)} - 4 \sqrt{g^5 H^5 \left(3 + H^2 k^2\right)}\right) + 2 \sqrt{g^5 H^5 \left(3 + H^2 k^2\right)} + 2 \sqrt{g^5 H^5 \left(3 + H^2 k^2\right)}\right) + 2 \sqrt{g^5 H^5 \left(3 + H^2 k^2\right)}$ $6016\,\sqrt{3}\,g^2\,H^2\,U + 225\,\sqrt{3}\,U^5 + 8\,g\,H\,U^2\left(256\,\sqrt{g\,H\left(3 + H^2\,k^2\right)}\, + 15\,\sqrt{3}\,U\right)\right)\right)dt - 4000\,g^2\,H^2\,U + 225\,\sqrt{3}\,U^2 + 225\,U^2 + 225\,U$ $\frac{1}{^{92\,160\,\left((g\,H)^{3/2}\,\left(3+H^2\,k^2\right)^{7/2}\right)}}\!\!\left(k^7\left(-48\,\sqrt{\,3\,}\,g^3\,H^3\left(6192+5004\,H^2\,k^2+1425\,H^4\,k^4+140\,H^6\,k^6\right)-\right.$ $8\,\sqrt{3}\,\,g^2\,H^2\left(60\,426+55\,557\,H^2\,k^2+17\,121\,H^4\,k^4+1772\,H^6\,k^6\right)U^2+$ $g H U^{3} \left(89856 \sqrt{g H (3 + H^{2} k^{2})} + 5265 \sqrt{3} U + 4590 \sqrt{3} H^{2} k^{2} U + 4500 \sqrt{3}$ $9 \, k^4 \left(3328 \, \sqrt{g \, H^9 \left(3 + H^2 \, k^2\right)} \right. \\ \left. + \, 145 \, \sqrt{3} \, H^4 \, U\right) + 8 \, k^6 \left(416 \, \sqrt{g \, H^{13} \left(3 + H^2 \, k^2\right)} \right. \\ \left. + \, 145 \, \sqrt{3} \, H^4 \, U\right) + 8 \, k^6 \left(416 \, \sqrt{g \, H^{13} \left(3 + H^2 \, k^2\right)} \right) \\ \left. + \, 145 \, \sqrt{3} \, H^4 \, U\right) + 8 \, k^6 \left(416 \, \sqrt{g \, H^{13} \left(3 + H^2 \, k^2\right)} \right) \\ \left. + \, 145 \, \sqrt{3} \, H^4 \, U\right) + 8 \, k^6 \left(416 \, \sqrt{g \, H^{13} \left(3 + H^2 \, k^2\right)} \right) \\ \left. + \, 145 \, \sqrt{3} \, H^4 \, U\right) + 8 \, k^6 \left(416 \, \sqrt{g \, H^{13} \left(3 + H^2 \, k^2\right)} \right) \\ \left. + \, 145 \, \sqrt{3} \, H^4 \, U\right) + 8 \, k^6 \left(416 \, \sqrt{g \, H^{13} \left(3 + H^2 \, k^2\right)} \right) \\ \left. + \, 145 \, \sqrt{3} \, H^4 \, U\right) + 8 \, k^6 \left(416 \, \sqrt{g \, H^{13} \left(3 + H^2 \, k^2\right)} \right) \\ \left. + \, 145 \, \sqrt{3} \, H^4 \, U\right) + 8 \, k^6 \left(416 \, \sqrt{g \, H^{13} \left(3 + H^2 \, k^2\right)} \right) \\ \left. + \, 145 \, \sqrt{3} \, H^4 \, U\right) + 8 \, k^6 \left(416 \, \sqrt{g \, H^{13} \left(3 + H^2 \, k^2\right)} \right) \\ \left. + \, 145 \, \sqrt{3} \, H^4 \, U\right) + 8 \, k^6 \left(416 \, \sqrt{g \, H^{13} \left(3 + H^2 \, k^2\right)} \right) \\ \left. + \, 145 \, \sqrt{3} \, H^4 \, U\right) + 8 \, k^6 \left(416 \, \sqrt{g \, H^{13} \left(3 + H^2 \, k^2\right)} \right) \\ \left. + \, 145 \, \sqrt{g \, H^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, H^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, H^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, H^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, H^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, H^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, M^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, M^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, M^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, M^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, M^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, M^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, M^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, M^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, M^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, M^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, M^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, M^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, M^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, M^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, M^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, M^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, M^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, M^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, M^2 \, M^2 \, M^2} \right) \\ \left. + \, 145 \, \sqrt{g \, M^2 \, M^2 \, M^$ $15\,\sqrt{3}\,H^{6}\,U\bigg)\bigg) + 3\,U\bigg(81\bigg(2816\,\sqrt{g^{5}\,H^{5}\,\big(3 + H^{2}\,k^{2}\big)}\, + 25\,\sqrt{3}\,U^{5}\bigg) +$ $3\;k^{2}\left(52\,352\,\sqrt{\,g^{5}\,H^{9}\left(3\,+H^{2}\,k^{2}\right)}\right.\,+\,9984\;\sqrt{\,g^{3}\,H^{7}\left(3\,+H^{2}\,k^{2}\right)}\;\,U^{2}\,+\,675\;\sqrt{\,3}\;\,H^{2}\,U^{5}\right)+$ $3 \ k^4 \left(11 \ 776 \ \sqrt{g^5 \ H^{13} \left(3 + H^2 \ k^2\right)} \right. + 225 \ \sqrt{3} \ H^4 \ U^5 \right) +$ $5\,k^{6} \left(512\,\sqrt{g^{5}\,H^{17}\left(3+H^{2}\,k^{2}\right)}\right. \\ \left. +\,15\,\sqrt{3}\,\,H^{6}\,U^{5}\right)\right)\right) dt^{2} - \frac{1}{_{30\,720\,(g\,H)^{3/2}\,(3+H^{2}\,k^{2})^{9/2}}}$ $\mathit{i}\,\,k^{8} \left(27\,k^{2} \left(20\,416\,\sqrt{\,g^{7}\,H^{11} \left(3\,+\,H^{2}\,k^{2}\right)}\right.\right.\\ \left.-\,80\,544\,\sqrt{\,3}\,\,g^{3}\,H^{5}\,U\,+\,82\,240\,\sqrt{\,g^{5}\,H^{9} \left(3\,+\,H^{2}\,k^{2}\right)}\right.U^{2}\,-\,80\,544\,\sqrt{\,g^{7}\,H^{11} \left(3\,+\,H^{2}\,k^{2}\right)}\right]$

$$\begin{split} & 46960\sqrt{3} \ g^2 \ H^4 \ U^3 + 6144\sqrt{g^3 \ H^7 \left(3 + H^2 \ k^2\right)} \ U^4 + 305\sqrt{3} \ g \ H^3 \ U^5 + 300\sqrt{3} \ H^2 \ U^7 \right) + \\ & k^8 \left(480\sqrt{g^7 \ H^{23} \left(3 + H^2 \ k^2\right)} \ - 11520\sqrt{3} \ g^3 \ H^{11} \ U + 5760\sqrt{g^5 \ H^{21} \left(3 + H^2 \ k^2\right)} \ U^2 - \\ & 9888\sqrt{3} \ g^2 \ H^{10} \ U^3 + 75\sqrt{3} \ H^8 \ U^7 + 16 \ g \ H^9 \ U^4 \left(96\sqrt{g \ H \left(3 + H^2 \ k^2\right)} \ + 5\sqrt{3} \ U \right) \right) + \\ & 243 \left(2592\sqrt{g^7 \ H^7 \left(3 + H^2 \ k^2\right)} \ - 8128\sqrt{3} \ g^3 \ H^3 \ U + 9152\sqrt{g^5 \ H^3 \left(3 + H^2 \ k^2\right)} \ U^2 - \\ & 4168\sqrt{3} \ g^2 \ H^2 \ U^3 + 25\sqrt{3} \ U^7 + g \ H \ U^4 \left(512\sqrt{g \ H \left(3 + H^2 \ k^2\right)} \ + 25\sqrt{3} \ U \right) \right) + \\ & 3k^6 \left(6720\sqrt{g^7 \ H^{19} \left(3 + H^2 \ k^2\right)} \ - 55216\sqrt{3} \ g^3 \ H^9 \ U + 39488\sqrt{g^5 \ H^{17} \left(3 + H^2 \ k^2\right)} \ U^2 - \\ & 41728\sqrt{3} \ g^2 \ H^8 \ U^3 + 300\sqrt{3} \ H^6 \ U^7 + 3 \ g \ H^7 \ U^4 \left(2048\sqrt{g \ H \left(3 + H^2 \ k^2\right)} \ + 105\sqrt{3} \ U \right) \right) + \\ & 9k^4 \left(19040\sqrt{g^7 \ H^{15} \left(3 + H^2 \ k^2\right)} \ - 99856\sqrt{3} \ g^3 \ H^7 \ U + 88512\sqrt{g^5 \ H^{13} \left(3 + H^2 \ k^2\right)} \ U^2 - 66296\sqrt{3} \ g^2 \ H^6 \ U^3 + 450\sqrt{3} \ H^4 \ U^7 + 3 \ g \ H^5 \ U^4 \left(3072\sqrt{g \ H \left(3 + H^2 \ k^2\right)} \ + 155\sqrt{3} \ U \right) \right) \right) d^3 + \\ & \frac{1}{92160 \ (g \ H^{10})^{3}} \left(214\sqrt{3} \ g^3 \ H^3 \left(893700 + 953451 \ H^2 \ k^2 + 376029 \ H^4 \ k^4 + 64744 \ H^6 \ k^6 + 4080 \ H^8 \ k^8 \right) U^2 - \\ & 3\sqrt{3} \ g^2 \ H^2 \left(3 + H^2 \ k^2\right\right)^2 \left(197625 + 114352 \ H^2 \ k^2 + 16944 \ H^4 \ k^4 \right) U^4 + \\ & 2g \ H \ U^5 \left(238464\sqrt{g \ H \left(3 + H^2 \ k^2\right)} \ + 8505\sqrt{3} \ U + 13365\sqrt{3} \ H^2 \ k^2 \ U + \\ & 27k^4 \left(5888\sqrt{g \ H^9 \left(3 + H^2 \ k^2\right)} \ + 285\sqrt{3} \ H^4 \ U \right) + 3k^6 \left(11776\sqrt{g \ H^{13} \left(3 + H^2 \ k^2\right)} \ + 645$$

$$\sqrt{3} \ H^6 \ U \right) + 4k^8 \left(736\sqrt{g \ H^{17} \left(3 + H^2 \ k^2\right)} \ + 45\sqrt{3} \ H^8 \ U \right) + \\ & 36k^2 \left(105472\sqrt{g^7 \ H^{11} \left(3 + H^2 \ k^2\right)} \ + 1400996\sqrt{g^5 \ H^{13} \left(3 + H^2 \ k^2\right)} \ U^2 + 25\sqrt{3} \ H^4 \ U^7 \right) + \\ & 18k^4 \left(60608\sqrt{g^7 \ H^{15} \left(3 + H^2 \ k^2\right)} \ + 20864\sqrt{g^5 \ H^{13} \left(3 + H^2 \ k^2\right)} \ U^2 + 75\sqrt{3} \ H^6 \ U^7 \right) + \\ & 5k^8 \left(384\sqrt{g^7 \ H^{23} \left(3 + H^2 \ k^2\right)} \ + 2048\sqrt{g^5 \ H^{11} \left(3 +$$

Out[132]= Omega error ||

 $\left(\frac{h^2 U k^3+3 U k+\sqrt{1}}{16ft(\frac{h^2 U k^3+3 U k+\sqrt{1}}{16ft(\frac{h^2 U k^2+3\right)} k\right)} k\right)$ $\label{eq:continuity} $$ k^2+3\right)^2-\frac{h^2 k^2+3\right)^2}-\frac{h^2 k^2+3\right)^2}-\frac{h^2 k^2+3\right)^2}-\frac{h^2 k^2+3\right)^2}-\frac{h^2 k^2+3\right)^2}-\frac{h^2 k^2+3\right)^2}-\frac{h^2 k^2+3\left(\frac{h^2 k^2+3\right)^2}{h^2 k^2+3}-\frac{h^2 k^2+3\left(\frac{h^2 k^2+3\left(\frac{h^2 k^2+3\right)^2}{h^2 k^2+3}-\frac{h^2 k^2+3\left(\frac{h^2 k^2+3\left(\frac{h^2 k^2+3\left(\frac{h^2 k^2+3\left(\frac{h^2 k^2+3\left(\frac{h^2 k^2+3\left(\frac{h^2 k^2+3\left($ $\left(3 g H+U \left(\frac{H^2 k^2+3\right)} U+2 \right) H+U \left(\frac{H^2 k^2+3\right)}\right)$ $\label{left} $$ \left(\frac{dt}^2}{3 \left(\frac{H^2 k^2+3\right)^2}-\frac{k^4 \left(\frac{H^2 k^2+3\right) U+\sqrt{3} \sqrt{4} k^2}{16H(H^2 k^2+3\right)}} \right) U+\sqrt{3} \left(\frac{H^2 k^2+3\right)^2} \right) dt + \frac{1}{3} \left(\frac{H^2 k^2+3}{16H(H^2 k^2+3)}\right) dt + \frac{1}{3} \left(\frac{H^2$ $k^2+3\right) \left(H^2 + \frac{1}{2} \left(H^2 + \frac{1}{2} \left(H^2 + \frac{1}{2} \right) \right) \right) \left(H^2 + \frac{1}{2} \left(H^2 + \frac{1}{2} \left(H^2 + \frac{1}{2} \right) \right) \right) \right)$ $k^2+9 \left(U+\sqrt{3} \right) U^2+3 g \left(U+\sqrt{3} \right) U^2+3 U^2+3$ \cart(a H \laft(H^2 \laft) + 2\right)\ U\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\rig

Squitg 11 Neut(11 4 K 473 argint); 11 argint/ argint/ weat(art 3); then (11 4 K 473 argint/ 3) that (k 11 argint/ argint/ 11 argint/ a $k^2+3\right) U+\sqrt{3} \left(H^4 U k^4+2\left(H^2 U k^2+3\right)\right) \left(H^4 U k^4+2\left(H^4 U k^4+2\right)\right)$ $U^3+6 g H \left(\frac{1}{2} \left(\frac{4^2 + 3\right)}{U+2 \cdot grt{g}} \right) + \left(\frac{4^2 + 3\right)}{U+2 \cdot grt{g}} + \left(\frac{4^$ $H^2\left(\frac{dt}^4}{5 \left(\frac{1}{4} i k^2\right)} + \frac{dt}{4} i k^2\right)$ $\label{left(frac(sqrt{3} U)(sqrt{H^2 k^2+3})}+2 \operatorname{left(sqrt{3} U+2 sqrt{g H})right)}+ \\ \operatorname{left(sqrt{3} U+2 sqrt{g H left(H^2 Left(Sqrt{3} U+2 sqrt{g H})right)}+\\ \operatorname{left(sqrt{3} U+2 sqrt{g H})right(Sqrt{3} U+2 sqrt{g H})right(Sqrt{4} U+2 sqrt{g H})right$ $k^2+3\right) \left(H^2 k^2+3\right) + \left(H^2 k^2+3\right) + \left(H^2 k^2+3\right) \right) + \left(H^2 k^2+3\right) + \left(H^2 k^$ $\left(\frac{4}{g} \left(\frac{4}{g}\right)\right)^{3/2}+\frac{4}{g} U+2 \left(\frac{4}{g} \left(\frac{4}{g}\right)\right)^{3/2}$ $\label{left} $\left(\left(H^4 \cup k^4 + 3 \cdot \left(U + ^2 + \sqrt{3} \cdot H^5 \cdot H^5 \cdot k^2 + 3 \cdot H^5 \right)\right)\right) + \left(U + \right) $\left(U + \left(U + \right) $\left(U + \right) $\left(U + \left(U + \right) $\left(U + \left(U + \left(U$ $\label{eq:continuous} $\operatorname{H}\left(H^2 k^2+3\right)\right)\right) + \operatorname{H}\left(H^2 k^2+3\right) + \operatorname{H}\left(H^2 k^2 U H^3+9 U H^3+9 U H^3\right) + \operatorname{H}\left(H^2 u H^3+9 U H^3+9 U H^3\right) + \operatorname{H}\left(H^2 u H^3+9 U H$ $\label{left(H^2 k^2+3\right)} $$ k^2+3\right) H\right) + (h^2) + (h$ $U+2 \left(H^2 \left(H^2 + 1 \right) \right) \left(H^2 + 1 \right) \left(H^4 + 1 \right)$ $\left(H^2 k^2+3\right)\right)\right)$ $\label{left(4.2)} $\left(\frac{h^2 k^2+3\right) U+2 \sqrt{4} \left(\frac{h^2 k^2+3\right)} U+9 g^2 H^2\right) $$$ $\t (text{dt}^4){4 \left(\frac{h^2 k^2+3\right)^{5/2}}+O\left(\frac{dt}{5} \right) } + O\left(\frac{dt}{5} \right) } + O\left$ $\left(12 \right) gH\left(12 \right) gH\left(14^2 \left(16\right) + U\left(16\right) gH\left(16\right) gH$ $H^2 U \rightarrow k^2-9 \qquad U+48 \qquad H^2 W^2+3 \rightarrow k^2+3 \rightarrow k$ $\left(\frac{H^2 k^2+3\right)}{-3}\left(\frac{H^2 k^2+3\right)}-\frac{k^4 \left(\frac{U^2 \left(\frac{H^2 k^2+3\right)}{-3}}{-3}\right)}{-3}$ $\sqrt{3} H^4 U \right) k^4+6 \left(-3 \right) H^2 U^3+16 \right) (H^2 k^2+3 \right) U^2+18$ $\sqrt{g^3 H^7 \left(\frac{H^2 k^2+3\right)}}\right) k^2+9 U^2 \left(\frac{16 \operatorname{sqrt}\{g H \left(\frac{H^2 k^2+3\right)}\right)}{3}\right)}$ $\sqrt{3} U\rightight)+4 g H \left[10 \right] V H^4+3 \left[4 H^9 \left(H^2 k^2+3\right)\right] k^4+63$ $\sqrt{3} H^2 U k^2+99 \sqrt{3} U+63 \sqrt{g H \left(\frac{h^2 k^2+3\right)}\right)} \left(\frac{3}{4} H^2 U k^2+99 \right)$ $\label{left(H^2 k^2+3\pi ight)^{5/2}} + \frac{k^5 \left(\frac{16 \operatorname{sqrt}g H^9 \left(\frac{4^2 k^2+3\pi ight}{4^2 k^2+3\pi ight}\right)-3 \operatorname{sqrt}{3}}{k^2 + 3\pi ight}\right)}{3} + \frac{1}{2} \left(\frac{1}{2} + \frac{1}{2} \operatorname{sqrt}{3} + \frac{1}{2} \operatorname{sqrt$ $H^4 \ U + 6 \ k^4 + 16 \$ $H^7 \left(H^2 k^2+3\right) U\right) U\right) +9$ $U^3 \left(16 \right) + H \left(16 \right) + H$ $\$ \\sqrt{g H^9 \left(H^2 k^2+3\right)\\right) \\right\) \\right\) \\sqrt{3} H^2 U \\\right\) \\sqrt{3} U+864 \\sqrt{g H} $\label{left(H^2 k^2+3\wedge ight)\wedge (h^2 k^2+3\wedge ight)\wedge$ $\label{eq:left} $\left(U \left(V_{72 \right) g^2 H^8+12 g U \left(s_{71} \right) U+3 \left(H^2 k^2+3 \right) \right)\right) right}$$ $H^7+U^3 \left(16 \right)^2 H^6(16 \right)^3 \left(16 \right)^3 \left(16$ \sqrt{3} g^2 U H^6+g U^2 \left(301 \sqrt{3} U+264 \sqrt{g H \left(H^2 k^2+3\right)}\right) H^5-9 \sqrt{3} $\label{left} $$U^5 + ^4+48 \left(H^2 k^2+3\right) U^4+36 \left(H^2 k^2+3\right) \right] U^4+36 \left(H^2 k^2+3\right) \left(H^$ k^4+9 \left(-9 \sqrt{3} H^2 U^5+48 \sqrt{g H^5 \left(H^2 k^2+3\right)} U^4+314 \sqrt{3} g H^3 $k^2+3\right) \$ $k^2+27 \left(-3 \right) k^2+16 \right) 16$ $\label{left(H^2 k^2+3\right)} $$\left(H^2 k^2+3\right)^{\frac{1}{2}}-\frac{dt}{3}{96 \cdot qrt{g H} \left(H^2 k^2+3\right)^{\frac{7}{2}}-\frac{dt}{k^7}}\right)$$$ \left(36 \sqrt{3} g^3 \left(4 H^4 k^4+27 H^2 k^2+48\right) H^3+3 \sqrt{3} g^2 \left(48 H^6 k^6+712 $H^4 k^4 + 3075 H^2 k^2 + 4113 \cdot y^2 H^2 + 2 g U^3 \cdot (13) \cdot y^2 H^6 + 12 \cdot y^2 H^6 + 13 \cdot y^2 H^6 + 13 \cdot y^2 H^6 + 13 \cdot y^2 H^6 + 12 \cdot y^2 H^6 + 13 \cdot y^2 H^6 + 12 \cdot y^2 H^6 + 13 \cdot y^2 H^6 + 12 \cdot y^2 H$ \left(H^2 k^2+3\right)\right) k^6+3 \left(197 \sqrt{3} U H^4+216 \sqrt{g H^9 \left(H^2 k^2+3\right)\right)}\right) $k^4+1872 \sqrt{4} H^2 U k^2+1971 \sqrt{3} U+5076 \sqrt{H} H \left(H^2 k^2+3\right)\right)$ $\left(U^4 \left(16 \right) + H^{13} \left(H^2 k^2 + 3\right) - 3 \right) + H^6 U\right) k^6 + 9 \left(H^2 k^2 + 3\right) + 16 \left(U^4 \left(H^2 k^2 + 3\right) + 16 \left(H^2 k^2 + 3\right) + 16$

. . .

 $H^4 U^5+16 \sqrt{H^2 k^2+3\right} U^4+48 \sqrt{g^5 H^{13} \left(H^2 k^2+3\right)} U^3+48 \sqrt{g^5 H^{13} \left(H^2 k^2+3\right)}$ $k^4+9 \left(-9 \right) H^2 U^5+48 \left(H^5 \left(H^2 k^2+3 \right) U^4+760 \right) H^7 \left(H^2 k^2+3 \right) U^4+760 \right) H^7 \left(H^2 k^2+3 \right) H^7 \left(H^7 k$ $k^2+3\right) U^2+400 \sqrt{g^5 H^9 \left(H^2 k^2+3\right)} V^2-81 \sqrt{3} U^5+432 \sqrt{g H}$ $\left(H^2 k^2+3\right) U^4+7344 \right(1)^4 H^5 \left(H^2 k^2+3\right)\right)\right) \left(H^2 k^2+3\right) U^4+7344 \right)$ $k^4 \left(\frac{3}{g} \left(\frac{4}{g} \right) \right) H^2+4 \left(\frac{4}{g} H^2\right)$ $k^2+3\right) \left(h^2 + h^2 + h^2 \right) \left(h^2 + h^2 \right$ \sqrt{3} U H^4+24 \sqrt{g H^9 \left(H^2 k^2+3\right)\right) k^4+24 \left(2 \sqrt{3} U H^2+7 \sqrt{g H^5} $\left(H^2 k^2+3\right) \$ U+8 \sqrt{3} g^2 H^2 \left(5 H^4 k^4+33 H^2 k^2+54\right)\right)\right) \text{dt}}{384 \left(g H $\left(H^2 k^2+3\right)^{5/2}\right)-\frac{i}{6}$ $\sqrt{3} U+10 \sqrt{g} H \left(\frac{^2 k^2+3\right)} H^5+3 \sqrt{3} U^5 H^4+16 \sqrt{g^5 H^{13}}$ \left(H^2 k^2+3\right)\right) k^4+3 \left(6\sqrt{3} H^2 U^5+51 \sqrt{3} g H^3 U^3+224 \sqrt{g^3 H^7 $\left(H^2 k^2+3\right) U^2+380 \right] H^4 U+96 \left(H^2 k^2+3\right) U^2+380 \right]$ $k^2+9 \left(3 \right) U^5+g H\left(27 \right) U+160 \left(4^2 k^2+3\right)\right)$ U^2+224 \sqrt{3} g^2 H^2 U+96 \sqrt{g^5 H^5 \left(H^2 k^2+3\right)\right)\right)\right)\\ text{dt}^2}{384 g k^2+3\right)\right)\left(\left(272 \sqrt{3} g^2 U H^6+2 g U^2 \left(17 \sqrt{3} U+56 \sqrt{g H \left(H^2 k^4+3 \left(6 \sqrt{3} H^2 U^5-3 \sqrt{g H^5 \left(H^2 k^2+3\right)} U^4+72 \sqrt{3} g H^3 U^3+334 $\sqrt{g^3 H^7 \left(H^2 k^2+3\right)} U^2+608 \right] g^2 H^4 U+184 \right] h^9 \left(H^2 L^2 + 184 \right)$ $H^5 \left(H^2 k^2+3\right)\right)\right) \left(H^2 k^2+3\right) \left(H^2$ $\left(\left(\frac{H^2 k^2+3\right)}{U+\sqrt{3} \sqrt{400}}\right) + \left(\frac{H^2 k^2+3\right)}{U+\sqrt{3} \sqrt{3} \sqrt{3}}$ $g^2 U H^6+4 g U^2 \left(11 \right) + 1 \left(14 + 2 \right) +$ $H^4+96 \sqrt{g^5 H^{13} \left(\frac{4^2 + \sin(h^2 k^2 + 3\right)}{h^4 + 96 \right)}} h^4+3 \left(\frac{3}{4^2 U^5 - 6 \right)} h^5$ $\left(H^2 k^2+3\right) U^4+95 \right] U^4+95$ $\$ \quad \ $H \left(H^2 k^2 + 3 \right) U^4 + g H \left(17 \right) U^1 + g H$ U^2+168 \sqrt{3} g^2 H^2 U+80 \sqrt{g^5 H^5 \left(H^2 k^2+3\right)\right)\right)\right)\\text{dt}^4}{384 g H $\left(H^2 k^2+3\right) + \left(H^2 k^2+3\right) + \left(H^2 k^3+H^2\right)$ $\left(H^2 k^2+3\right)^2 U^4+8 g H\left(H^2 k^2+3\right)\right) \left(H^5 \left(H^5 \right)^2 U^4+8 g H\right)$ $\left(H^2 k^2+3\right)\right) \ h^2+96 \ gH\left(H^2 k^2+3\right) \ U+16 \ g^2 H^2$ $\left(5 H^4 k^4+48 H^2 k^2+144\right)\right)\left(5 H^3 k^4+48 H^2 k^2+144\right)$ k^6 \left(\left(4368 \sqrt{3} g^2 U H^8+2048 g \sqrt{g H \left(H^2 k^2+3\right)} U^2 H^7-225 \sqrt{3} $U^5 H^6+1920 \sqrt{g^5 H^{17} \left(\frac{H^2 k^2+3\right)}{tght}} k^6+3 \left(\frac{14512 \sqrt{3} g^2 U}{t^6+1920}\right)$ $H^6+24 g U^2 \left(156 \right) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16 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16) + 16 (156 + 16) + 16 (156 + 16) + 16 (156 + 16) + 16$ $H^4+6720 \operatorname{sqrt}_{g^5} H^{13} \left(h^2 k^2+3\right) h^4+9 \left(-675 \operatorname{sqrt}_{3} H^2 U^5-240 \right)$ \sqrt{3} g H^3 U^3+6144 \sqrt{g^3 H^7 \left(H^2 k^2+3\right)} U^2+16160 \sqrt{3} g^2 H^4 U+8448 $\label{left(H^2 k^2+3\wedge ight)} -15 \cdot qrt\{3\} \ U \cdot ight) \ U^2+6016 \cdot qrt\{3\} \ g^2 \ H^2 \ U+3968 \cdot qrt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ H^5 \cdot left(H^2 \ H^2 \ U+3968 \cdot grt\{g^5 \ 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 $k^2+3\right)\right) \left(g H\right)^{3/2} \left(h^2 k^2+3\right)^{7/2}-\frac{h^2}{2} \left(h^2 k^2+3\right)^{7/2} \right)$ \left(48 \sqrt{3} g^3 \left(140 H^6 k^6+1425 H^4 k^4+5004 H^2 k^2+6192\right) H^3+8 \sqrt{3} g^2 \left(1772 H^6 k^6+17121 H^4 k^4+55557 H^2 k^2+60426\right) U^2 H^2+g U^3 \left(8 \left(416 $\$ \\ \quad \P^{13} \\ \eft(\P^2 \ k^2 + 3\right)\ -15 \\ \quad \P^3 \ \ \eft(\P^2 \ k^6 + 9 \\ \eft(\P^3 \ \quad \P^6 \ \P^7 \\ \eft(\P^2 \ \eft(\P k^2+3\right)}-145 \sqrt{3} H^4 U\right) k^4-4590 \sqrt{3} H^2 U k^2-5265 \sqrt{3} U+89856 \sqrt{g} $\sqrt{3} H^6 U^5 \right) k^6+3 \left(11776 \right) H^{13} \left(H^2 k^2+3\right)-225 \right)$ $H^4 U^5 \right\} k^4+3 \left(-675 \right) H^2 U^5+9984 \right] h^7 \left(h^2 k^2+3 \right)$ $U^2+52352 \sqrt{g^5 H^9 \left(H^2 k^2+3\right)} k^2+81 \left(816 \sqrt{g^5 H^5 \left(H^2 k^2+3\right)} k^2+81 \right)$ $k^2+3\right)^{7/2}\right)-\frac{i^2 k^2 + 3^2 u^{3} g^3 u^{7/2}\right)^{7/2}\right)^{7/2}\right)^{1/2} + \frac{i^3 u^{3} u^{3}$ $H^{10}+16 g U^4 \left(\frac{4 \cdot g U^4 \cdot g H \left(\frac{4^2 k^2+3 \right)}{5 \cdot g t (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g t (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g t (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g t (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g t (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g t (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g t (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g t (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g t (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g t (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g t (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g t (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g t (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g t (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g t (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g t (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g t (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g t (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g t (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g t (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g (3)}{5 \cdot g (3)} U \right) + 16 g U^4 \left(\frac{6 \cdot g (3)}{5 \cdot g (3)} U \right) + 1$ $U^7 H^8 + 5760 \sqrt{g^5 H^{21} \left(H^2 k^2 + 3\right)} U^2 + 480 \sqrt{g^7 H^{23} \left(H^2 k^2 + 3\right)}$ k^2+3\right)\right) k^8+3 \left(55216 \sqrt{3} g^3 U H^9+41728 \sqrt{3} g^2 U^3 H^8+3 g U^4 $\left(2048 \right) + 16f(2048 \right) + 16f(4^2 k^2+3\right) - 105 \left(2048 \right) + 16f(2048 + 16f(204$ $\sqrt{g^5 H^{17} \left(\frac{4^2 k^2+3\right)} U^2+6720 \sqrt{g^7 H^{19} \left(\frac{4^2 k^2+3\right)} \right) k^6+9}$ \left(99856 \sqrt{3} g^3 U H^7+66296 \sqrt{3} g^2 U^3 H^6+3 g U^4 \left(3072 \sqrt{g H \left(H^2 $k^2+3\right)-155 \left(13\right) U\right)-155 \left(13\right) U\right)$ $k^2+3\right) U^2+19040 \sqrt{15} \left(H^2 k^2+3\right) \$ H^2 U^7-305 \sqrt{3} g H^3 U^5+6144 \sqrt{g^3 H^7 \left(H^2 k^2+3\right)} U^4+46960 \sqrt{3} g^2 $H^4 U^3 + 82240 \sqrt{f^5 H^9 \left(H^2 k^2 + 3\right)} U^2 + 80544 \sqrt{3} g^3 H^5 U + 20416 \sqrt{g^7}$ $H^{11} \left(\frac{4^2 k^2 + 3\right)}{k^2 + 3\right) k^2 + 243 \left(\frac{-25 \left(-25 \right) + g H \left($ $k^2+3\right)^2-25 \sqrt{3} U\right)^3-25 \sqrt{3} U\right)$ k^2+3\right)} U^2+8128 \sqrt{3} g^3 H^3 U+2592 \sqrt{g^7 H^7 \left(H^2 k^2+3\right)\right)\right)\right) $\text{dt}^3{30720 (g H)^{3/2} \left(H^2 k^2+3\right)} + \frac{k^9}{9/2} + \frac{g H \left(4 \left(H^2 k^2 + 3 \right) + \frac{k^9}{9/2} \right)}{16}$ $H^{17} \left(H^2 k^2 + 3\right) - 45 \right) + 45 \left(H^2 k^2 + 3\right) + 45 \left(H^$ $k^2+3\right)-645 \sqrt{4} k^2+3\right)-645 \sqrt{4} k^2+3\left(5888 \sqrt{4} H^9 \left(14^2 k^2+3\right)\right)-285$ \sqrt{3} H^4 U\right) k^4-13365 \sqrt{3} H^2 U k^2-8505 \sqrt{3} U+238464 \sqrt{g H \left(H^2 k^2+3\right)\right) U^5+3 \sqrt{3} g^2 H^2 \left(H^2 k^2+3\right)^2 \left(16944 H^4 k^4+114352) H^2 k^2+197625\right) U^4+24 \sqrt{3} g^3 H^3 \left(4080 H^8 k^8+64744 H^6 k^6+376029 H^4 k^4+953451 H^2 k^2+893700\right) U^2+3 \left(5 \left(-15 \sqrt{3} U^7 H^8+2048 \sqrt{g^5 H^{21}} $\left(H^2 k^2+3\right) U^2+384 \right(H^2 k^2+3\right) \$ k^2+3\right)\right) k^6+18 \left(-225 \sqrt{3} H^4 U^7+100096 \sqrt{g^5 H^{13} \left(H^2 k^2+3\right)} $U^2+60608 \left(\frac{g^7 H^{15} \left(H^2 k^2+3\right)}{right} \right) k^4+36 \left(-225 \left(\frac{3}{H^2 U^7}+5888 \right) \right) k^4+36 \left(-225 \left(\frac{3}{H^2 U^7}+5888 \right) k^4+36 \left(\frac{3}{H^2 U^$ $\label{eq:continuous} $\operatorname{g^3 H^7 \left(H^2 k^2+3\right)} U^4+144512 \left(g^5 H^9 \left(H^2 k^2+3\right)\right) U^2+105472 \right) $$ $H^5 \left(H^2 k^2+3\right) U^2+33920 \left(H^2 k^2+3\right) U^2+33920 \right)$ \sqrt{3} g^4 H^4 \left(40 H^8 k^8+1000 H^6 k^6+7395 H^4 k^4+22104 H^2 k^2+23832\right)\right) $\label{eq:left} $$ \operatorname{dt}^4{92160 (g H)^{3/2} \left(H^2 k^2+3\right)^{9/2}}+O\left(\operatorname{dt}^5\right)\right)$$ $\t (4x)^4 + O\left(\frac{dx}^5 \right), \left(\frac{H^2 U k^3 + 3 U k - \sqrt{4x}^3} \right) + \left(\frac{dx}^5 \right) \right).$ $k^2+3\right) k^2 + k^2 + 3\left(k^3 \left(k^3 \left(k^3 \left(k^2 + 3\right)\right)^2 + k^2 + 3\right) \right) k^2 + k^2 + 3\left(k^3 \left(k^3 \left(k^$ $U-\sqrt{3} \operatorname{H}\left(H^2 k^2+3\right) - \left(H^2 k^2+3\right) -$

 $k^4 \left(\frac{h^2 k^2+3\right) U-\sqrt{h^2 k^2+3\right)} \left(\frac{h^2 k^2+3\right)}{h^2 k^2+3\right) }$ $k^4-3 \left(\frac{3} \right) \left(\frac{4^2 + 1}{100} + \frac{4^2 + 1}{100} \right) = H^2 U \right) k^2+9 U-9 \left(\frac{3}{100} \right)$ $\left(H^2 k^2+3\right) U-3 g H \left(H^2 k^2+3\right) U-3 g$ $k^2+3\right) \right) + \frac{k^2+3\right)^3}{4\left(\frac{k^2+3\right)^3}+\frac{k^5\left(\frac{k^5}{k^5}\right)^3}{k^5}\right)^3} + \frac{k^5}{k^5} \left(\frac{k^5}{k^5}\right)^3 + \frac{k^5}{k^5} \left$ $U-\sqrt{g} H \left(\frac{A^2 k^2+3\right)} \right) \left(\frac{A^2 k^2+3\right)} \right) \left(\frac{A^2 k^2+3\right)} \right) \left(\frac{A^2 k^2+3\right)} \left(\frac{A^2 k^2+3\right)} \right) \left(\frac{A^2 k^2+3\right)} \left(\frac{A^2 k^2+3\right)} \left(\frac{A^2 k^2+3\right)} \right) \left(\frac{A^2 k^2+3\right)} {\left(\frac{A^2 k^2+3\right)} {\left(\frac{A^2 k^2+3\right)} \left(\frac{A^2 k^2+3\right)} {\left(\frac{$ $\$ \\ \sqrt{g H^5 \\ left(H^2 k^2+3\right)\\ right) \\ U^3+6 g H \left(H^2 k $^2+3$ \right) U-2 \sqrt{3} \sqrt{g H \left(H^2 k $^2+3$ \right)\right) U+9 g 2 $H^2\right) \text{ t (t)^4}{5 \left(H^2 k^2 + 3\right)^3} + O\left(t\right)^5\right) + \left(H^2 k^2 + 3\right)^3 + O\left(t\right)^5\right) + O\left(t\right)^3 + O\left(t\right)$ $i k^2 \left(\frac{g H}{\sin(2 \cdot grt{g H})-\frac{3 U}{\sin(4 \cdot grt{H^2 k^2+3})}\right) + \frac{k^3 \left(\frac{g H}{\sin(4 \cdot grt{g H})} \right)}{\sin(4 \cdot grt{g H})}$ $\left(H^2 k^2+3\right)-\sqrt{3} U\right) - \left(H^2 k^2+3\right) U-\sqrt{3} \sqrt{4} H \left(H^2 k^2+3\right) U-\sqrt{3}$ $k^2+3\right)-\sqrt{3} U\right) + \frac{1}{3} U\left(\frac{1}{3} U\right) + \frac{1}{3} U\left(\frac{$ $\label{left(H^2 k^2+3\right)\right)\right)\ \text{dt}^2} {4 \left(H^2 k^2+3\right)^{3/2}}-\frac{1}{4}\left(H^2 k^2+3\right)^{3/2}} = \frac{1}{4}\left(H^2 k^2+3\right)^{3/2}} -\frac{1}{4}\left(H^2 k^2+3\right)^{3/2}} = \frac{1}{4}\left(H^2 k^2+3\right)^{3/2}} -\frac{1}{4}\left(H^2 k^2+3$ $\left(\frac{1}{2} \right) \left(\frac{1}{2} \right) \left(\frac$ $\sqrt{g H^5 \left(H^2 k^2+3\right)}-2 H^2 U\right) k^2+9 U-9 \sqrt{3} \sqrt{g H \left(H^2 k^2+3\right)}-2 H^2 U\right)$ $k^2+3\right) \ U-\$ $\label{left(H^2 k^2+3\right)} $$ k^2+3\right) \right) $$ k^2+3\right) \left(k^2+3\right)^{5/2}-\frac{k^6 \left(k^6 \right)^2}{2 \left(k^6 \right)^2} \right) $$$ $H \left(H^2 k^2+3\right)-\sqrt{3} \left(H^4 U k^4+\left(H^4 U$ $\label{eq:localization} $\left(H^2 k^2+3\right)\right] \ h^2+9 U-12 \ \sqrt{3} \ \left(H^2 k^2+3\right) \ h^2+3 \ h^2+3$ $\left(\frac{h^2 k^2+3\right)}{U-2 \sqrt{h^2 k^2+3}}\right) U-2 \sqrt{h^2 k^2+3}\right)$ $\left(H^2 k^2+3\right)^{3/2}-\frac{i k^4 \left(H^2 \left(H^2 \right) + H^4+16\right)^{3/2}}{H^9 \left(H^2 \left(H^2 \right) + H^4+16\right)^{3/2}}$ k^2+3\right)\right) k^4+6 \left(3 \sqrt{3} H^2 U^3+16 \sqrt{g H^5 \left(H^2 k^2+3\right)} U^2+18 $k^2+3\right)$ H \left(\left(3 \sqrt{g H^9 \left(H^2 k^2+3\right)}-10 \sqrt{3} H^4 U\right) $k^4-63 \sqrt{3} H^2 U k^2-99 \sqrt{3} U+63 \sqrt{6} H \left(h^2 k^2+3\right) \right) \$ $\label{left(H^2 k^2+3\right)^{5/2}} + \frac{k^5 \left(U^3 \left(U^3 \right) + \frac{16}{3} U H^4 + 16 \right)^{5/2}} + \frac{16}{3} U H^5 + \frac$ $\left(H^2 k^2+3\right)\right)$ U^3+56 \sqrt{g^3 H^7 \left(H^2 k^2+3\right)} U\right) k^2-12 \sqrt{3} g^2 H^2 \left(2 H^4 k^4+15) $\left(4 \left(6 \right) k^4 - 429 \left(H^2 k^2 + 3\right) - 17 \right) h^4 U\right) k^4 - 429 \left(H^2 k^2 + 3\right) h^4 U\right)$ $U k^2 - 675 \sqrt{3} U + 864 \sqrt{g} H \left(h^2 k^2 + 3\right) \right) \left(h^2 k^2 + 3\right) \left($ $\left(H^2 k^2+3\right)^{5/2}+\frac{k^6}{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2} -10^{10^2$ \sqrt{g H \left(H^2 k^2+3\right)\right) H^7-U^3 \left(3 \sqrt{3} U H^6+16 \sqrt{g H^{13} \left(H^2 $\label{eq:continuous} $$ k^2+3\right)\right\ k^6+3 \left(-304 \right) ^3 g^2 U H^6+g U^2 \left(264 \right) H^6+g U^2 \left(264 \right) $$$ $k^2+3\right)=301 \left(H^2 k^2+3\right) + 31 \left(H^5+9 \right) + 448 \left(H^9 \left(H^2 k^2+3\right) \right)$ $U^4+36 \sqrt{13} \left(\frac{4^2 k^2+3\right)}{right} k^4+9 \left(9 \sqrt{13} H^2 U^5+48 \right)$ $H^5 \left(H^2 k^2+3\right) U^4-314 \right) U^3+438 \left(H^2 k^2+3\right) U^4-314$ $U^5+16 + H \left(H^2 k^2+3\right) + H$

 $\sqrt{3} U\right) U^2-172 \left(3 g^2 H^2 U+52 \right) H^5 \left(H^2 k^2+3\right)/\eta(1)\right)$ dt^3 {96 \sqrt{g H} \left(H^2 k^2+3\right)^{7/2}}+\\frac{k^7 \left(36 \sqrt{3} g^3 \left(4 H^4 k^4+27 H)^2}+\\frac{k^7 \left(36 \sqrt{3} g^3 \left(4 H^4 k^4+27 H)^2}+\\frac{k^7 \left(36 \sqrt{3} g^3 \left(4 H^4 k^4+27 H)^4}+\\frac{k^7 \left(4 H^4 k^4+27 H)^4}+\\frac{k^7 \left(4 H^4 k^4+27 H)^4}+\\frac{k^7 \left(4 H^4 k^4+27 H)^4}{\text{4} \text{4} \text{ H^2 k^2+48\right) H^3+3 \sqrt{3} g^2 \left(48 H^6 k^6+712 H^4 k^4+3075 H^2 k^2+4113\right) $\label{eq:continuity} $$U^2 H^2+2 g U^3 \left(2 \left(31 \right) \right) H^6 U-12 \right(H^13) \left(H^2 k^2+3\right)\right)\right). $$U^2 H^2+2 g U^3 \left(13 \right) \left(13 \right) H^6 U-12 \right). $$$ $k^6+3 \left(197 \right) + 4 U-216 \left(14^2 k^2+3\right) + k^4+1872 \left(14^2 k^2+3\right) + k^4+182 \left(14^2 k^2+3\right) + k^4 \left(14^2 k^2+3\right) + k^2 \left(14^2 k^2+3\right) + k^2 \left(14^2 k^2+3\right) + k^2 \left(14^2 k^2+3\right) + k^2 \left(14^2 k^2+3\right) +$ $H^2 U k^2+1971 \sqrt{1} \sqrt{1} U-5076 \sqrt{g H \left(H^2 k^2+3\right)} H-U \left(H^4 \left(H^2 k^2+3\right)\right)$ $\$ \\sqrt{g H^9 \left(H^2 k^2+3\right)} U^4+48 \\sqrt{g^5 H^{13} \left(H^2 k^2+3\right)}\\right) k^4+9 $\left(9 \right) H^2 U^5+48 \right] H^5 \left(H^2 k^2+3\right) U^4+760 \right] H^7 \left(H^2 k^2+3\right)$ $k^2+3\right) U^2+400 \left(h^9 \left(h^2 k^2+3\right) k^2+81 \right) U^5+432 \left(h^2 k^2+3\right) h^2 U^5+442 \left(h^2 k^2+3\right) h$ $H \left(\frac{H^2 k^2 + 3 \right) \left(\frac{4}{3} + \frac{4}{96} + \frac{h^5 \left(\frac{H^2 k^2 + 3 \right)}{16} \right) \left(\frac{4}{3} + \frac{4}{96} + \frac{h^5 \left(\frac{H^2 k^2 + 3 \right)}{16} \right) \left(\frac{H^2 k^2 + \frac{1}{3} \right) \left(\frac{H^$ $\label{eq:linear_sqrt} $$ \operatorname{H} \left(H^2 k^2+3\right)^{7/2}+O\left(\frac{dt}^5\right)\right) \left(\frac{dt}^2-1\right). $$$ $\left(3 \right) \left(4 \right)$ $k^2+3\left(k^2+3\right) + k^2+6\left(k^2+3\right) + k^2+3\left(k$ $\label{left} $$ \eft(3 \right)^{3/2}+\frac{k^5 \left(1 - k^5 \right)^{2} \left(1 - k^5 \right)^{2} U^4-2 g H \left(1 - k^5 \right)^{2} U^4-2 U^4-2 g H \left(1 - k^5 \right)^{2} U^4-2 U^4-2 g H \left(1 - k^5 \right)^{2} U^4-2 U^4-2 U^4-2 U^4-2 U^4-2 U^4-2 U^4-2 U$ $H^9 \left(H^2 k^2+3\right) - 7 \left(H^4 U\right) k^4+24 \left(H^7 \left(H^2 k^2+3\right) - 1\right) - 2$ $\sqrt{3} H^2 U \right) k^2-81 \sqrt{3} U+324 \sqrt{g H \left(\frac{h^2 k^2+3\right)}\right) U+8 \sqrt{3} g^2$ $H^2 \left(\frac{5 H^4 k^4+33 H^2 k^2+54\right)}{384 g H \left(\frac{4 k^2+3\right)}{52}} - \frac{1}{52}$ $U = \frac{1}{h^5-3 \sqrt{3} U^5 H^4+16 \sqrt{g^5 H^{13} \left(\frac{h^2 k^2+3\right)} k^4+3 \left(\frac{-6}{h^5-3} \right)} \ln(h^2 k^4+3 \ln(h^2 k^2+3) \ln(h^2 k^2+3)} \ln(h^2 k^4+3 \ln(h^2 k^2+3))} \ln(h^2 k^4+3 \ln(h^2 k^2+3))}$ $\sqrt{3} H^2 U^5-51 \right] U^3-224 \left(H^2 U^5-51 \right) U^2-380 \right]$ g^2 H^4 U+96 \sqrt{g^5 H^9 \left(H^2 k^2+3\right)}\right) k^2+9 \left(-3 \sqrt{3} U^5+g H \left(160 $\left(H^2 k^2+3\right)^2-27 \left(H^2 u^2+3\right)^2-27 \left(H^2 u^2+3\right)^2 U\right)^2-224 \left(H^2 u^2+3\right)^2$ $\left(H^2 k^2+3\right)\right) \left(H^2 k^2+3\right) \left(H^2 k^2+3\right$ $\label{left} $\left(\left(\frac{H^2 k^2+3\right) U-\sqrt{3} \right) H(H^2 k^2+3\right)}\right) \left(-\left(\frac{-272 \sqrt{3}}{2}\right) H(H^2 k^2+3\right) \left(\frac{H^2 k^2+3\right) H(H^2 k^2+3\right) H(H^2 k^2+3\right) H(H^2 k^2+3) H(H^2 k^2+3\right) H(H^2 k^2+3) H(H^2 k^2+3\right) H(H^2 k^2+3) H(H^2 k^2+3\right) H(H^2 k^2+3) H(H$ $g^2 U H^6+2 g U^2 \left(\frac{56 \sqrt{4 + 2 + 3 \right)}{17 \sqrt{3} U right} H^5-3 \sqrt{3} U^5 \right)$ $H^4+48 \left(\frac{6 \operatorname{13} \left(H^2 k^2+3\right)}{right} \right) \right)$ $\left(H^2 k^2+3\right) U^4-72 \right] U^4-72 \right] U^3+334 \right]$ $\sqrt{3} g^2 H^4 U+184 \sqrt{g^5 H^9 \left(H^2 k^2+3\right)} k^2-9 \left(-3 \sqrt{3} U^5-3 \right)$ $\left(H^2 k^2+3\right) U^4+2 g H \left(H^2 k^2+3\right)-19 \left(H^2 k^2+3\right) U \rightarrow U^2-352 \left(\frac{9^2 H^2 U+160 \left(\frac{9^5 H^5 \left(\frac{4^2 L^2 + 3 \right)}{10^2 U+160 \left(\frac{9}{10^2 U+160 \left(\frac{9}{10^$ $\label{eq:left} $$ \operatorname{dt}^3}_{384} \left(H^2 k^2 + 3\right)^{7/2}\right) - \frac{k^8 \left(\sqrt{3} \right)^{4}}{h^2} .$ $\label{eq:k-2+3-right} $$ k^2+3\right)-\left(\frac{400}{q^2} L^2 k^2+3\right)U\right)^2\left(-\left(\frac{400}{q^2} L^3\right)^2\right) L^2(36) + L^2(36) L^2(36)$ $\left(H^2 k^2+3\right) -11 \right) H^5-3 \left(H^5-3 \right) U^5 H^4+96 \right)$ $\left(H^2 k^2+3\right) \ k^4-3 \left(H^2 u^5-6 \right) \ H^5 \left(H^2 k^2+3\right)$ U^4-95 \sqrt{3} g H^3 U^3+456 \sqrt{g^3 H^7 \left(H^2 k^2+3\right)} U^2-884 \sqrt{3} g^2 H^4 $U+304 \sqrt{g^5 H^9 \left(\frac{h^2 k^2+3\right)}{k^2-27 \left(\frac{-\sqrt{3} U^5-2 \sqrt{h^2 H^6}}{h^2 L^6}\right)}$ $k^2+3\right) U^4+g H \left(112 \right) U^2-168 U^2-13 U^3-13 U^$ \sqrt{3} g^2 H^2 U+80 \sqrt{g^5 H^5 \left(H^2 k^2+3\right)\right)\right) \text{dt}^4}{384 g H \left(H^2 k^2+3\right)} $\label{left(4} $$ k^2+3\right)^{9/2}}+O\left(\frac{dt}^5\right)\right) \cdot \left(\frac{dx}^3+\left(\frac{dx}^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+\left(\frac{dx}^3\right)^3+$ $k^2+3\right)^2 U^4+8 g H \left(H^2 k^2+3\right) \left(16H(42 k^2+3\right)^2 U^4+8 g H^5 \left(H^2 k^2+3\right)^3 U^4+8 g H^5 \left(H^2 k^2+3\right)^3 U^4+8 g H^5 U^4$ $\sqrt{3} H^2 U \right) k^2+96 \right] H \left(h^2 k^2+3 \right) U-16 \right] g^2 H^2 \left(h^2 k^2+3 \right) U-16 \right]$ $H^4 k^4+48 H^2 k^2+144 \right) (g H)^{3/2} \left(H^2 k^2+3 \right)^{5/2} + \frac{1}{4} \left(H^2 k^2+3 \right) (g H)^{3/2} \left(H^2 k^2+3 \right$ \laft/\laft/_A268 \sart(3) a^2 II U^8_20149 a \sart(a U \laft(U^2 b^2_2)right)) II^2 U^7_225 \sart(3)

U^5 H^6+1920 \sqrt{g^5 H^{17} \left(H^2 k^2+3\right)}\right) k^6+3 \left(-14512 \sqrt{3} g^2 U $H^6+24 g U^2 \left(\int \sqrt{1} U+256 \right) H^6+24 g U^2 \left(\int \sqrt{1} U+25$ H^4+6720 \sqrt{g^5 H^{13} \left(H^2 k^2+3\right)\right) k^4+9 \left(675 \sqrt{3} H^2 U^5+240 \sqrt{3} g H^3 U^3+6144 \sqrt{g^3 H^7 \left(H^2 k^2+3\right)} U^2-16160 \sqrt{3} g^2 H^4 U+8448 \sqrt{g^5 H^9 \left(H^2 k^2+3\right)\right) k^2+27 \left(225 \sqrt{3} U^5+8 g H \left(15 \sqrt{3} U+256 $k^2+3\right)\right) \left(g H\right)^{3/2} \left(h^2 k^2+3\right)^{7/2}-\frac{h^2}{2} \left(h^2 k^2+3\right)^{7/2} \right)$ \left(-48 \sqrt{3} g^3 \left(140 H^6 k^6+1425 H^4 k^4+5004 H^2 k^2+6192\right) H^3-8 \sqrt{3} g^2 \left(1772 H^6 k^6+17121 H^4 k^4+55557 H^2 k^2+60426\right) U^2 H^2+g U^3 \left(8 \left(15 \sqrt{3} U H^6+416 \sqrt{g H^{13} \left(H^2 k^2+3\right)\right) k^6+9 \left(145 \sqrt{3} U H^4+3328 $\left(H^2 k^2+3\right) \ k^6+3 \left(H^2 k^2+3\right) \ h^{13} \left(H^2 k^2+3\right)$ $k^2+3\right) k^4+3 \left(675 \right) k^4+3 \left(675$ $\label{eq:u^2+52352 sqrt{g^5 H^9 \left(\frac{h^2 k^2+3\right)}\right) h} $$ U^2+52352 \sqrt{4^2 k^2+3\right)} \ U^5+2816 \ \sqrt{6^5 k^2+3} \ U^5+2816 \ U^5+2816$ $H^5 \left(H^2 k^2+3\right)\right)\right) \left(H^2 k^2+3\right)\right)$ $k^2+3\right)^{7/2}\right)-\frac{i k^8 \left(\frac{11520 \right) g^3 U H^{11}-9888 \right) g^2}{i k^2+3\right)}$ $\label{eq:continuous} $$U^7 H^8+5760 \operatorname{sqrt}\{g^5 H^{21} \left(H^2 k^2+3\right) U^2+480 \operatorname{sqrt}\{g^7 H^{23} \left(H^2 k^2+3\right) U^2+480 \right) $$$ k^2+3\right)\right) k^8+3 \left(-55216 \sqrt{3} g^3 U H^9-41728 \sqrt{3} g^2 U^3 H^8+3 g U^4 \left(105 \sqrt{3} U+2048 \sqrt{g H \left(H^2 k^2+3\right)\right) H^7+300 \sqrt{3} U^7 H^6+39488 $\label{left} $$ H^{17} \left(H^2 k^2 + 3\right) U^2 + 6720 \left(g^7 H^{19} \left(H^2 k^2 + 3\right) \right) \right) $$ ight) $$ (H^2 k^2 + 3\right) \left(H^2 k$ k^6+9 \left(-99856 \sqrt{3} g^3 U H^7-66296 \sqrt{3} g^2 U^3 H^6+3 g U^4 \left(155 \sqrt{3}) $U+3072 \sqrt{4} H \left(\frac{A^2 k^2+3\right)}{H^5+450 \sqrt{3} U^7 H^4+88512 \sqrt{g^5 H^{13}}} \right)$ $\left(H^2 k^2+3\right) U^2+19040 \right(15) \left(H^2 k^2+3\right) k^4+27 \left(15\right)$ \sqrt{3} H^2 U^7+305 \sqrt{3} g H^3 U^5+6144 \sqrt{g^3 H^7 \left(H^2 k^2+3\right)} U^4-46960 \sqrt{3} g^2 H^4 U^3+82240 \sqrt{g^5 H^9 \left(H^2 k^2+3\right)} U^2-80544 \sqrt{3} g^3 H^5 U+20416 \sqrt{g^7 H^{11} \left(H^2 k^2+3\right)}\right) k^2+243 \left(25 \sqrt{3} U^7+g H \left(25) \sqrt{3} U+512 \sqrt{g H \left(H^2 k^2+3\right)\right) U^4-4168 \sqrt{3} g^2 H^2 U^3+9152 $\sqrt{g^5 H^5 \left(H^2 k^2+3\right)} U^2-8128 \left(3\right) g^3 H^3 U+2592 \left(g^7 H^7 \left(H^2 k^2+3\right)\right) U^2-8128 \right)$ $k^2+3\left(\frac{4t}^3}{30720 (g H)^{3/2} \left(\frac{4^2+3\left(\frac{4t}^3 \right)^{9/2}}{100} + \frac{4t}^3} \right) } \right)$ $\left(2 g H \left(4 \left(4 \right) \right) k^8+36 \right) \left(4 \right) k^2 + 3 \left(4 \left(4 \right) k^2 + 3 \right) k^8+3$ $\label{lem:condition} $$U H^4+5888 \left(H^9 \left(H^2 k^2+3\right) \right) \ h^4+13365 \right) \ h^2 U k^2+8505 \ \ \ h^3 H^2 U k^2+8505 \ h^3 H^2 U k^2+8505 \ \ h^3 H^2 U k^2+8505 \ h^3 H^2 U k^$ $U+238464 \sqrt{4} k^2 + 3\right) U^5-3 \sqrt{3} g^2 H^2 \left(H^2 k^2+3\right)^2$ \left(16944 H^4 k^4+114352 H^2 k^2+197625\right) U^4-24 \sqrt{3} g^3 H^3 \left(4080 H^8 k^8+64744 H^6 k^6+376029 H^4 k^4+953451 H^2 k^2+893700\right) U^2+3 \left(5 \left(15 $\sqrt{3} U^7 H^8+2048 \sqrt{21} \left(H^2 k^2+3\right) U^2+384 \sqrt{6^7 H^{23} \left(H^2 k^2+3\right)} U^2+384 \right)$ $k^2+3\right) \ h^6 U^7+20864 \ \ h^{17} \ h^6 U^7+20864 \ \ h^{17} \ h^6 U^7+20864 \ \ h^{17} \$ $\label{left} $$U^2+9600 \operatorname{sqrt}\{g^7 H^{19} \left(h^2 k^2+3\right)\right) h^6+18 \left(225 \operatorname{sqrt}\{3\} H^4 U^7+100096 \right) h^6+18$ $\$ \\ \quad \qq \quad k^4+36 \left(225 \sqrt{3} H^2 U^7+5888 \sqrt{g^3 H^7 \left(H^2 k^2+3\right)} U^4+144512 $\$ \\sqrt{g^5 H^9 \\left(H^2 k^2+3\right)} \\ U^2+105472 \\sqrt{g^7 H^{11} \\left(H^2 k^2+3\right)}\\right)}

 $k^2+135 \left(45 \right) U^7+39424 \left(45 \right) U^7+39424$ k^6+7395 H^4 k^4+22104 H^2 k^2+23832\right)\right)\text{dt}^4}{92160 (g H)^{3/2} \left(H^2

Out[133]=

$$\begin{aligned} & \text{Out} [\text{134}] = \ EA \ || \ & \left\{ \left\{ 1 + \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, \text{H}^2 \, k^3 \, \text{U} \, \text{Csc} \left[\frac{\text{dx} \, k}{2} \right]}{6 + 2 \, \text{H}^2 \, k^2 \right) \, w}, \, \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, \text{H} \, k \, \text{Csc} \left[\frac{\text{dx} \, k}{2} \right]}{2 \left(\text{H} + \frac{\text{H}^3 \, k^2}{3} \right) \, w} \right\}, \\ & \left\{ \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, k \left(g \, \text{H} \, \left(3 + \text{H}^2 \, k^2 \right) - 3 \, \text{U}^2 \right) \, \text{Csc} \left[\frac{\text{dx} \, k}{2} \right]}{4 + i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, k \left(6 + \text{H}^2 \, k^2 \right) \, \text{U} \, \text{Csc} \left[\frac{\text{dx} \, k}{2} \right]}{6 + 2 \, \text{H}^2 \, k^2 \right) \, w} \right\} \right\} \end{aligned}$$

Out[135]= $EA \parallel \label{eq:entropy} \$

\begin{array}{cc} $\frac{i e^{\frac{1}{2}} \left(1-e^{-i \text{text}dx} k\right) \left(1-e^{i \cdot text}dx\right) \left(1$ $w \rightarrow H^2 U \csc \left(\frac{k}{2} \right) k^3 {\left(H^2 K^2 + 6 \right) w} + 1$ & $\frac{i e^{\left(\frac{i e^{\left(\frac{1-e^{-i \cdot \left(1-e^{-i \cdot \cdot \left(1-e^{-i \cdot \cdot \left(1-e^{-i \cdot \left(1-e^{-i \cdot \cdot \cdot \cdot \left(1-e^{-i \cdot \cdot \cdot \cdot } \right)} + e^{-i \cdot \cdot } + e^{-i \cdot \cdot } + e^{-i \cdot \cdot }} + e^{-i \cdot \cdot } + e^{-i \cdot \cdot } + e^{-i \cdot \cdot }} + e^{-i \cdot \cdot } + e^{-i \cdot \cdot }} + e^{-i \cdot \cdot } + e^{-i \cdot \cdot }} + e^{-i \cdot \cdot }} + e^{-i \cdot \cdot } + e^{-i \cdot \cdot }} + e^{-i \cdot \cdot \cdot \cdot \cdot }} + e^{-i \cdot \cdot \cdot \cdot \cdot }} + e^{-i \cdot \cdot \cdot \cdot -}} + e^{-i \cdot \cdot \cdot \cdot }} + e^{-i \cdot \cdot \cdot \cdot \cdot -}} + e^{-i \cdot \cdot \cdot \cdot \cdot \cdot -}} + e^{-i \cdot \cdot \cdot \cdot \cdot -}} + e^{-i \cdot \cdot \cdot -}}$ $w\}$ right) $H \ \csc \left(\frac{dx}{k}^2\right)^{2}\left(\frac{k^2 H^3}{3}+H\right) w} \$ $\label{eq:linear_state} $$ \frac{i \cdot x_{dx} k}{2}} \left(1-e^{-i \cdot x_{dx} k}\right) \left(1-e$ $\label{left} $$\left(H^2 k^2+3\right)-3 U^2\right] \le \left(\frac{4x}{k}^2+3\right)^{-3} U^2\right] = 0.$ w} & $\frac{i e^{\frac{1}{2}} \left(1-e^{-i \cdot k} k}{1-e^{-i \cdot k} k}\right)}{1-e^{-i \cdot k}} \left(1-e^{-i \cdot k} k\right) \left(1-e^{-i \cdot k} k\right)}$ $k \left(H^2 k^2 + 6 \right) U \left(\frac{k}{2} \right) \left(H^2 k^2 + 6 \right) w + 1$ \end{array} \right)

$$\begin{array}{l} \text{Cod}[136] = \ \ \text{Eerr} \ \| \ \ \left\{ \left\{ \frac{i \left[\sqrt{3} \ k \sqrt{g \, \text{H} \, (3+\text{H}^2 \, \text{k}^2)} \, + 3 \, k \, \text{U} \right] \, dt}{3 \, \text{H}^2 \, k^2} - \frac{1}{2} \left(- \frac{i \sqrt{3} \ k \sqrt{g \, \text{H} \, (3+\text{H}^2 \, k^2)}}{3 \, \text{H}^2 \, k^2} - i \, k \, \text{U} \right)^2 \, dt^2 - \\ \\ = \frac{1}{6} \left(- \frac{i \sqrt{3} \ k \sqrt{g \, \text{H} \, (3+\text{H}^2 \, k^2)}}{3 \, \text{H}^2 \, k^2} - i \, k \, \text{U} \right)^3 \, dt^3 - \frac{1}{24} \left(- \frac{i \sqrt{3} \ k \sqrt{g \, \text{H} \, (3+\text{H}^2 \, k^2)}}{3 \, \text{H}^2 \, k^2} - i \, k \, \text{U} \right)^4 \, dt^4 + O[dt]^5 \right) + \\ \\ = \left(- \frac{1}{2} \left(\sqrt{g \, \text{H}} \ k^2 \right) \, dt + O[dt]^5 \right) \, dx + \left(\frac{i \, (9 \, \text{H}^2 \, k^2 + 2 \, \text{H}^4 \, k^2) \, \text{U} \, dt}}{12 \, (3 \, \text{H}^2 \, k^2)^2} + O[dt]^5 \right) \, dx^2 + \left(\frac{1}{24} \sqrt{g \, \text{H}} \ k^4 \, dt + O[dt]^5 \right) \, dx^3 + \\ \\ = \left(- \frac{i \, (54 \, \text{H}^2 \, k^2 + 2 \, \text{H}^4 \, k^2) \, \text{U} \, dt}{240 \, (3 \, \text{H}^2 \, k^2)^2} + O[dt]^5 \right) \, dx^2 + \left(\frac{i}{24} \sqrt{g \, \text{H}} \ k^4 \, dt + O[dt]^5 \right) \, dx^3 + \\ \\ = \left(- \frac{i \, (54 \, \text{H}^2 \, k^2 + 2 \, \text{H}^3 \, k^2) \, \text{U} \, dt}{4 \, (3 \, \text{H}^2 \, k^2)^2} + O[dt]^5 \right) \, dx^2 + \left(\frac{i}{240} \, (3 \, \text{H}^2 \, k^2)^3} + O[dt]^5 \right) \, dx^4 + O[dx]^5 \right\}, \\ \\ = \left(\left(- i \, g \, \text{H} \, k + \frac{3 \, i \, k \, \text{U}^2}{3 \, \text{H}^2 \, k^2}} \right) \, dt + O[dt]^5 \right) \, dx^2 + \left(- \frac{i}{2} \left(\sqrt{g \, \text{H}} \ k^2 \, \text{U} \right) \, dt + O[dt]^5 \right) \, dx + \\ \\ \left(\frac{i \, (18 \, g \, \text{H} \, k^3 + 12 \, g \, B^3 \, k^3 - 18 \, k^3 \, U^2 + 3 \, B^3 \, k^3 + 12 \, k^3 \, U^2 + 4 \, k^3 \, U^2 + 4 \, k^3 \, U^2 + 4 \, k^3 \, U^2 \, dt + O[dt]^5 \right) \, dx + \\ \\ \left(- \frac{i \, (54 \, g \, \text{H} \, k^3 + 54 \, g \, B^3 \, k^3 + 18 \, k^3 \, U^2 + 3 \, B^3 \, k^3 + 12 \, k^3 \, U^2 + 4 \, k^3 \, U^2 + 4 \, k^3 \, U^2 + 4 \, k^3 \, U^3 \, dx + O[dt]^5 \right) \, dx^3 + \\ \\ \left(- \frac{i \, (54 \, g \, \text{H} \, k^3 + 54 \, g \, B^3 \, k^3 + 12 \, k^2 \, U^2 + 2 \, B^3 \, k^3 \, U^2 + 4 \, k^3 \, U^2 + 4 \, k^3 \, U^2 + 4 \, k^3 \, U^3 \, dx + O[dt]^5 \right) \, dx^4 + O[dt]^5 \right) \, dx^3 + \\ \\ \left(\frac{i \, (\sqrt{3} \, k \, \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, k^2)}}{3 \, H^3 \, k^2} - i \, k \, U \right)^3 \, dt^3 - \frac{1}{24} \left(- \frac{i \, \sqrt{3} \, k \, \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, k^2)}}{3 \, H^3 \, k^2} - i \, k \, U \right)^4 \, dt^4 + O[dt]^5 \right) \, dx^4 + O[dt]^5 \right) \, dx^3$$

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Out[137]= Eerr || \left(
                                                           \begin{array}{cc}
                                                               \left(\frac{1}{t} \left(\frac{U + \sqrt{4}}{t} \right) \right) k \right) k \right) 
                                                                                                         k^2+3-\frac{1}{2} \left(-i U k-\frac{i \sqrt{3} \sqrt{g H \left(H^2 k^2+3\right)} k}{H^2}
                                                                                                          k^2+3\right\right)^2 \left( \frac{1}{6} \left( -i \ U \ k-\frac{1}{3} \right)^2 \left( \frac{1}{6} \right)^2 -\frac{1}{6} \left( -i \ U \ k-\frac{1}{3} \right)^2 \left( \frac{1}{6} \right)^2 -\frac{1}{6} \left( \frac{1}{6} \right)^2 -
                                                                                                         k_{H^2 k^2+3}\right) \times \frac{1}{24} \left( i \cdot U \cdot k - \frac{1}{24} \right) + \frac{1}{24} \left( i \cdot V \cdot k - \frac{1}{24} \right) 
                                                                                                          k^2+3\right) k^{4+0\left(\frac{t}{^5}\right)} k^{4+0\left(\frac{t}{^5}\right)} k^{2+3}\right) k^{2}+3\left(\frac{t}{^5}\right) k^{2}
                                                                                                        \left(\sqrt{g H} k^2\right) \text{dt}+O\left(\text{dt}}^5\right)\right) \text{dx}+\left(\frac{i}{eft}(2 H^4
                                                                                                         k^7+9 H^2 k^5 \in U \text{ } U \text{ } (4t){12 \left(H^2 k^2+3\right)^2}+O\left(t xt\left(dt\right)^5\right) = h^2 k^5 \in U \text{ } (4t)^6 \in U \text{ } 
                                                                                                         \text{dx}^2 + \left(\frac{1}{24} \right) + k^4 \left(\frac{dt}{-0}\right) \right)
                                                                                                         \text{dx}^3+\text{left}(-\frac{1}{2} A^6 k^{11}+19 A^4 k^9+54 A^7 + 10 U \text{dt}} U \text{dt}
                                                                                                         \label{eq:linear_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_con
                                                                                                         \left(\sqrt{g H} k^2 U\right) \text{dt}+O\left(\text{dt}\^5\right)\right) \text{dx}+\left(\frac{i} \left(2
                                                                                                         g H^5 k^7+12 g H^3 k^5-3 H^2 U^2 k^5-18 U^2 k^3+18 g H k^3\right) \text{dt}}{12 \left(H^2
                                                                                                         k^2+3\left(\frac{1}{24} \right) + O\left(\frac{dt}^5\right) \right) + O\left(\frac{dt}^5\right) + O\left(\frac{dt}^5
                                                                                                         \text{text}\{dt\}+O\left(\frac{dt}^5\right)\right) \cdot \left(\frac{dx}^3+\left(\frac{dx}^3+\frac{dx}^3+\frac{dx}^3\right)\right)
                                                                                                         H^5 k^9+H^4 U^2 k^9+54 g H^3 k^7-54 U^2 k^5+54 g H k^5\right) \text{dt}}{240 \left(H^2
                                                                                                         \label{left(sqrt{3} k sqrt{g H left(H^2 k^2+3\right)}-3 k U\right) \text{ } \text{text{dt}}{H^2 k^2+3}-\frac{1}{2}} $$ $$ \| \mathbf{H}^2 \mathbf{K}^2 + \mathbf{H}^2 \mathbf{K}^
                                                                                                         \left(-i U k - \frac{i \sqrt{3} \operatorname{H \left(H^2 k^2 + 3\right)}}{k}{H^2 k^2 + 3\right)}\right)
                                                                                                         \text{text}\{dt\}^2-\frac{1}{6} \left(i \cup k-\frac{1}{3} \right) \left(H^2 k^2+3\right) k}{H^2}
                                                                                                          k^2+3\right) sqrt{g H \left( h^2 k^2+3\right) } \left( i \left( h^2 k^2+3\right) \right) sqrt{g H \left( h^2 k^2+3\right) } 
                                                                                                         k}{H^2 k^2+3}\right)^4 \text{$t(\text{dt}^4+O\left(\text{text}\left(\text{dt}\right)^5\right)\right)} + \left(-\frac{1}{2} \left(\frac{1}{2} \right)^4 \right)^4
                                                                                                         H_k^2\right) \operatorname{text}(dt) + O\left(\frac{dt}{t}\right) \operatorname{text}(dt) + \left(\frac{dt}{t}\right) \operatorname{text}(dt
                                                                                                         H^2 U k^5+36 U k^3 \right) \left( \frac{dt}{12} \left( \frac{k^2 + 3 \right)^2}{+O\left( \frac{dt}{5} \right)} \right) \left( \frac{dt}{5} \right) \right)
                                                                                                         \left(2 H^6 U k^{11}+17 H^4 U k^9+54 H^2 U k^7+108 U k^5\right) \left(2 H^6 U k^{11}+17 H^4 U k^9+54 H^2 U k^7+108 U k^5\right)
                                                                                                         k^2+3\right) + O\left(text{dt}^5\right) \cdot text{dx}^4+O\left(text{dx}^5\right) \cdot text{dx}^6
                                                           \end{array}
                                                           \right)
       \ln[138] = \text{KurF} = (\text{fm} * \text{ap} - \text{fp} * \text{am} + \text{am} * \text{ap} * (\text{qp} - \text{qm})) / (\text{ap} - \text{am});
                                                           KurFWS = KurF /. ap \rightarrow (U + Sqrt[q * H]) /. am \rightarrow 0;
                                                           KurFWSeta =
                                                                                  KurFWS /. fp \rightarrow (H * v + U * Rpp * n) /. fm \rightarrow (H * v + U * Rmp * n) /. qp \rightarrow Rpp * n /.
                                                                                                 qm \rightarrow Rmp * n;
                                                           KurFWSeta = KurFWSeta / . v \rightarrow (GGp * G + Gnp * n);
                                                           Kfnnp = FullSimplify[KurFWSeta /. G \rightarrow 0 /. n \rightarrow 1];
                                                           KfnGp = FullSimplify[KurFWSeta /. n \rightarrow 0 /. G \rightarrow 1];
```

```
Kfnn = Kfnnp / . Rpp \rightarrow Rp / . Rmp \rightarrow Rm / . GGp \rightarrow GG2 / . Gnp \rightarrow Gn2;
KfnG = KfnGp / Rpp \rightarrow Rp / Rmp \rightarrow Rm / GGp \rightarrow GG2 / Gnp \rightarrow Gn2;
Fnn2 = -dt * (1 - Exp[-I * k * dx]) / dx * Kfnn;
Fnn2TA = Series[Fnn2 - FnnA, {dx, 0, 3}, {dt, 0, 3}];
Fnn2TAr = Refine[Fnn2TA, \{k > 0, U > 0, H > 0, g > 0\}];
FnG2 = -dt * (1 - Exp[-I * k * dx]) / dx * KfnG;
FnG2TA = Series[FnG2 - FnGA, {dx, 0, 3}, {dt, 0, 3}];
FnG2TAr = Refine[FnG2TA , \{k > 0, U > 0, H > 0, g > 0\}];
KurFWSG = KurFWS /. fp \rightarrow (U*Rpp*G + U*H*v + g*H*Rpp*n) /.
       fm \rightarrow (U*Rmp*G+U*H*v+g*H*Rmp*n)/.qp \rightarrow Rpp*G/.qm \rightarrow Rmp*G;
KurFWSG = KurFWSG / . v \rightarrow (GGp * G + Gnp * n);
KfGnp = FullSimplify[KurFWSG /. G \rightarrow 0 /. n \rightarrow 1];
KfGGp = FullSimplify[KurFWSG /. n \rightarrow 0 /. G \rightarrow 1];
 \texttt{KfGn} \ = \ \texttt{KfGnp} \ / \ . \ \texttt{Rpp} \ \rightarrow \ \texttt{Rp} \ / \ . \ \ \texttt{Rmp} \ \rightarrow \ \texttt{Rm} \ / \ . \ \ \texttt{GGp} \ \rightarrow \ \texttt{GG2} \ / \ . \ \ \texttt{Gnp} \ \rightarrow \ \texttt{Gn2} ; 
KfGG = KfGGp / . Rpp → Rp / . Rmp → Rm / . GGp → GG2 / . Gnp → Gn2;
FGn2 = -dt * (1 - Exp[-I * k * dx]) / dx * KfGn;
FGn2TA = Series[FGn2 - FGnA, {dx, 0, 3}, {dt, 0, 3}];
FGn2TAr = Refine[FGn2TA, \{k > 0, U > 0, H > 0, g > 0\}];
fGG2 = U * H * GG2 + U / 2 * (Rm + Rp) - (Sqrt[g*H]) / (2) * (Rp - Rm);
FGG2 = -dt * (1 - Exp[-I * k * dx]) / dx * KfGG;
FGG2TA = Series[FGG2 - FGGA, {dx, 0, 4}, {dt, 0, 3}];
FGG2TAr = Refine[FGG2TA, \{k > 0, U > 0, H > 0, g > 0\}];
Fmat2 = {{Fnn2, FnG2}, {FGn2, FGG2}};
Emat2 = IdentityMatrix[2] + Fmat2;
Eerr = Series[Emat2 - Exp[-I * wAp * dt] * IdentityMatrix[2], {dx, 0, 4}, {dt, 0, 4}];
EigvFmat2 = Eigenvalues[Fmat2];
RKStep = Log[1 + EigvFmat2] / (I * dt);
RKstepTay = Series[RKStep, {dx, 0, 4}, {dt, 0, 4}];
RKstepTayr = Simplify[-RKstepTay - \{wAp, wAm\}, \{k > 0, H > 0, g > 0, U > 0\}];
Text[Row[{" U > Sqrt(gH)"}]]
Text[" "]
Text[Row[{"Fnn || ", Kfnnp}]]
Text[Row[{"Fnn || ", TeXForm[Kfnnp]}]]
Text[Row[{"Fnn error || ", Fnn2TAr}]]
Text[Row[{"Fnn error || ", TeXForm[Fnn2TAr]}]]
Text[" "]
Text[Row[{"FnG || ", KfnGp}]]
Text[Row[{"FnG || ", TeXForm[KfnGp]}]]
```

```
Text[Row[{"FnG error || ", FnG2TAr}]]
                                                                        Text[Row[{"FnG error ||
                                                                                                                                                                                                                                                                                                                                                                                                                               ", TeXForm[FnG2TAr]}]]
                                                                        Text[" "]
                                                                          Text[Row[{"FGn ||
                                                                                                                                                                                                                                                                                                                                                   ", KfGnp}]]
                                                                          Text[Row[{"FGn ||
                                                                                                                                                                                                                                                                                                                                                 ", TeXForm[KfGnp]}]]
                                                                          Text[Row[{"FGn error ||
                                                                                                                                                                                                                                                                                                                                                                                                                                 ", FGn2TAr}]]
                                                                          Text[Row[{"FGn error ||
                                                                                                                                                                                                                                                                                                                                                                                                                                 ", TeXForm[FGn2TAr]}]]
                                                                          Text[" "]
                                                                        Text[Row[{"FGG ||
                                                                                                                                                                                                                                                                                                                                               ", KfGGp}]]
                                                                          Text[Row[{"FGG ||
                                                                                                                                                                                                                                                                                                                                                    ", TeXForm[KfGGp]}]]
                                                                          Text[Row[{"FGG error ||
                                                                                                                                                                                                                                                                                                                                                                                                                                 ", FGG2TAr}]]
                                                                        Text[Row[{"FGG error ||
                                                                                                                                                                                                                                                                                                                                                                                                                                 ", TeXForm[FGG2TAr]}]]
                                                                          Text[" "]
                                                                        Text[" "]
                                                                        Text[Row[{"Omega error ||
                                                                                                                                                                                                                                                                                                                                                                                                                                                       ", RKstepTayr}]]
                                                                          Text[Row[{"Omega error
                                                                                                                                                                                                                                                                                                                                                                                                                                                       ", TeXForm[RKstepTayr]}]]
                                                                          Text[" "]
                                                                        Text[Row[{"EA ||
                                                                                                                                                                                                                                                                                                                           ", EA}]]
                                                                          Text[Row[{"EA || ", TeXForm[EA]}]]
                                                                          Text[Row[{"Eerr || ", Eerr}]]
                                                                        Text[Row[{"Eerr || ", TeXForm[Eerr]}]]
   Out[172]= U > Sqrt(gH)
   Out[173]=
   Out[174]= Fnn || Gnp H + Rmp U
   Out[175]= Fnn || \text{text}\{Gnp\}\ H+\text{text}\{Rmp\}\ U
 \begin{array}{l} \text{Out} \text{[176]=} \  \, Fnn \ error \  \, || \  \, \left( -\frac{\left( H^2 \, k^3 \, U \, w \right) \, dt^2}{2 \, \left( 3 + H^2 \, k^2 \right)} \, - \, \frac{i \, H^2 \, k^3 \, U \, w^2 \, dt^3}{6 \, \left( 3 + H^2 \, k^2 \right)} \, + \, O[dt]^4 \right) \, + \\ \left( -\frac{1}{2} \left( k^2 \, U \right) dt \, + \, O[dt]^4 \right) dx \, + \left( \frac{i \, (9 \, H^2 \, k^5 + 2 \, H^4 \, k^7) \, U \, dt}{12 \, \left( 3 + H^2 \, k^2 \right)^2} \, + \, O[dt]^4 \right) dx^2 \, + \left( \frac{1}{24} \, k^4 \, U \, dt \, + \, O[dt]^4 \right) dx^3 \, + \, O[dx]^4 \\ \end{array} 
   Out[177]= Fnn error |
                                                                                         \label{left-frac} $$\left(-\frac{dt}^2 \left(H^2 k^3 U \right)_{1} -\frac{1}{2} \left(H^2 k^3 U \right)_{1} \right) - \frac{1}{2} \left(H^2 k^3 U \right)_{1} - \frac{1}{2} \left(H^2 k^3 
                                                                                                                             \left(H^2 k^2+3\right)+O\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left
                                                                                                                             U = U + O \left( \frac{dt}{4} - \frac{dt}{4} \right) + U = \frac{dt}{4} - 
                                                                                                                              k^5 + U \left( \frac{dt}{dt} \right) + \left
                                                                                                                             \left(\frac{1}{24} k^4 U \text{dt}+O\left(\text{dt}\^4\right)\right)+O\left(\text{dx}\^4\right)
   Out[178]=
   Out[179]= FnG \parallel GGpH
   Out[180]= FnG \mid \mid \text{text}\{GGp\} H
```

$$\text{Out[181]=} \quad FnG \ error \ \mid \mid \ \left(-\frac{3 \ (k \ w) \ dt^2}{2 \left(3 + H^2 \ k^2 \right)} - \frac{i \ k \ w^2 \ dt^3}{2 \left(3 + H^2 \ k^2 \right)} + O[dt]^4 \right) \\ + \left(\frac{i \left(6 \ k^3 + H^2 \ k^5 \right) dt}{4 \left(3 + H^2 \ k^2 \right)^2} + O[dt]^4 \right) dx^2 \\ + O[dx]^4 + O$$

 $Out[182] FnG error \parallel \left(-\frac{3 \text{text}}{dt}^2 (k w)}{2 \left(-\frac{3 \text{text}}{dt}^2 (k w)}\right) - \frac{1}{2} \left(-\frac{3 \text{text}}{dt}^3 k w^2}{2 \left(-\frac{3 \text{text}}{dt}^3 k w^2}\right)\right) - \frac{1}{2} \left(-\frac{3 \text{text}}{dt}^3 k w^2}{2 \left(-\frac{3 \text{text}}{dt}^3 k w^2}\right)\right) - \frac{1}{2} \left(-\frac{3 \text{text}}{dt}^3 k w^2}{2 \left(-\frac{3 \text{text}}{dt}^3 k w^2}\right)\right) - \frac{1}{2} \left(-\frac{3 \text{text}}{dt}^3 k w^2}{2 \left(-\frac{3 \text{text}}{dt}^3 k w^2}\right)\right) - \frac{1}{2} \left(-\frac{3 \text{text}}{dt}^3 k w^2}{2 \left(-\frac{3 \text{text}}{dt}^3 k w^2}\right)\right) - \frac{1}{2} \left(-\frac{3 \text{text}}{dt}^3 k w^2}{2 \left(-\frac{3 \text{text}}{dt}^3 k w^2}\right)\right) - \frac{1}{2} \left(-\frac{3 \text{text}}{dt}^3 k w^2}{2 \left(-\frac{3 \text{text}}{dt}^3 k w^2}\right)\right) - \frac{1}{2} \left(-\frac{3 \text{text}}{dt}^3 k w^2}{2 \left(-\frac{3 \text{text}}{dt}^3 k w^2}\right)\right) - \frac{1}{2} \left(-\frac{3 \text{text}}{dt}^3 k w^2}{2 \left(-\frac{3 \text{text}}{dt}^3 k w^2}\right)\right) - \frac{1}{2} \left(-\frac{3 \text{text}}{dt}^3 k w^2}{2 \left(-\frac{3 \text{text}}{dt}^3 k w^2}\right)\right) - \frac{1}{2} \left(-\frac{3 \text{text}}{dt}^3 k w^2}{2 \left(-\frac{3 \text{text}}{dt}^3 k w^2}\right)\right) - \frac{1}{2} \left(-\frac{3 \text{text}}{dt}^3 k w^2}{2 \left(-\frac{3 \text{text}}{dt}^3 k w^2}\right)\right) - \frac{1}{2} \left(-\frac{3 \text{text}}{dt}^3 k w^2}{2 \left(-\frac{3 \text{text}}{dt}^3 k w^2}\right)\right) - \frac{1}{2} \left(-\frac{3 \text{text}}{dt}^3 k w^2} + \frac{3 \text{$ $\label{eq:continuity} $$ k^2+3\right)+O\left(\frac{t}{4}\right)+\left(\frac{dx}^2\right)=0. $$ k^2+3\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4$ $\label{left} $$ \left(\frac{dt}{4 \left(\frac{h^2 k^2+3\right)}}-2\right)-\left(\frac{dt}{4 \left(\frac{h^2 k^2+3\right)}}-2\right)-2\right)$$

Out[183]=

Out[184]= $FGn \parallel H(gRmp + Gnp U)$

Out[185]= $FGn \parallel H (g \text{text}\{Rmp\} + \text{text}\{Gnp\} U)$

$$\begin{array}{l} \text{Out} \\ \text{(186)=} & FGn \; error \; \mid \mid \; \left(-\frac{\left(k \left(3 \, g \, H + g \, H^3 \, k^2 - 3 \, U^2 \right) w \right) dt^2}{2 \left(3 + H^2 \, k^2 \right)} - \frac{i \, k \left(3 \, g \, H + g \, H^3 \, k^2 - 3 \, U^2 \right) w^2 \, dt^3}{6 \left(3 + H^2 \, k^2 \right)} + O[dt]^4 \right) + \left(-\frac{1}{2} \left(g \, H \, k^2 \right) dt + O[dt]^4 \right) dx + \\ \left(\frac{i \left(18 \, g \, H \, k^3 + 12 \, g \, H^3 \, k^5 + 2 \, g \, H^5 \, k^7 - 18 \, k^3 \, U^2 - 3 \, H^2 \, k^5 \, U^2 \right) dt}{12 \left(3 + H^2 \, k^2 \right)^2} + O[dt]^4 \right) dx^2 + \left(\frac{1}{24} \, g \, H \, k^4 \, dt + O[dt]^4 \right) dx^3 + O[dx]^4 \end{array}$$

Out[187]= FGn error |

 $\text{text}\{dt\}^3 \text{ k w}^2 \left\{ \text{H}^3 \text{ k}^2 + 3 \text{ g H} - 3 \text{ U}^2\right\} \left\{ \text{h}^6 \left\{ \text{H}^2 \right\} \right\}$ $k^2+3\right)+O\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}$ \left(2 g H^5 k^7+12 g H^3 k^5-3 H^2 U^2 k^5-18 U^2 k^3+18 g H k^3\right) $\text{dt}{12 \left(H^2 k^2+3\right)^2}+O\left(\left(text{dt}^4\right)\right)+\left(text{dx}^3\right)$

 $\left(\frac{1}{24} g H k^4 \left(\frac{dt}{-0}\right)\right)\right) + O\left(\frac{1}{24} g H k^4 \left(\frac{dt}{-0}\right)\right)$

Out[188]=

Out[189]= $FGG \parallel (GGp H + Rmp) U$

Out[190]= $FGG \parallel U (\text{text}\{GGp\} H + \text{text}\{Rmp\})$

$$\left(-\frac{\left(k\left(6+H^{2}\,k^{2}\right)U\,w\right)dt^{2}}{2\left(3+H^{2}\,k^{2}\right)}-\frac{i\,k\left(6+H^{2}\,k^{2}\right)U\,w^{2}\,dt^{3}}{6\left(3+H^{2}\,k^{2}\right)}+O[dt]^{4}\right)+\left(-\frac{1}{2}\left(k^{2}\,U\right)dt+O[dt]^{4}\right)dx+\left(\frac{i\left(36\,k^{3}+15\,H^{2}\,k^{5}+2\,H^{4}\,k^{7}\right)U\,dt}{12\left(3+H^{2}\,k^{2}\right)^{2}}+O[dt]^{4}\right)dx^{2}+\\ \left(\frac{1}{24}\,k^{4}\,U\,dt+O[dt]^{4}\right)dx^{3}+\left(-\frac{i\left(108\,k^{5}+54\,H^{2}\,k^{7}+17\,H^{4}\,k^{9}+2\,H^{6}\,k^{11}\right)U\,dt}{240\left(3+H^{2}\,k^{2}\right)^{3}}+O[dt]^{4}\right)dx^{4}+O[dx]^{5}$$

Out[192]= FGG error |

 $\left(-\frac{t}{2 \ker\{dt\}^2 \left(H^2 k^2+6\right)}}{2 \ker\{dt\}^2 \left(H^2 k^2+6\right)}}{2 \ker\{dt\}^3 k U w^2}\right)$ $\left(H^2 k^2+6\right)\right) \left(H^2 k^2+3\right) +O\left(H^2 k^2+3\right) +O\left(H^2 k^2+3\right) +O\left(H^2 k^2+6\right) +O\left(H^2 k^2+6\right$ $\left(\frac{k^2 U}{ight}\right) \left(\frac{k^2 U}{$ k^5+36 k^3 right) U \text{dt}{12 \left(H^2 k^2+3 right)^2}+O \left(\text{dt}^4\right)\right)+\text{dx}^3 \left(\frac{1}{24} k^4 U \text{dt}+O\left(\text{dt}\^4\right)\right)+\text{dx}\^4 \left(-\frac{i} \left(2 H^6 k^{11}+17 H^4 k^9+54 H^2 k^7+108 k^5\right) U \text{dt}}{240} $\left(H^2 k^2+3\right)^3+O\left(\left(text{dt}^4\right)\right)+O\left(text{dx}^5\right)$

Out[193]=

Out[194]=

$$8k^4 \sqrt{g} H^9 (3 + H^2 k^2) U^2 + 3k^2 (3 \sqrt{g^3} H'(3 + H^2 k^2) + 16 \sqrt{g} H^3 (3 + H^2 k^2) U^2) \Big) d^2 \Big) \Big/ \Big(96 \sqrt{g} H (3 + H^2 k^2)^{3/2} + \Big(i k^6 \left(\sqrt{3} \sqrt{g} H(3 + H^2 k^2) + (3 + H^2 k^2) U^2 \right) \Big) d^2 \Big) \Big/ \Big(96 \sqrt{g} H (3 + H^2 k^2) U^2 + g H \left(198 \sqrt{g} H(3 + H^2 k^2) + \sqrt{3} (585 + 378 H^2 k^2 + 61 H^4 k^4) U\right) + 6k^2 \left(9 \sqrt{g^3} H^7 (3 + H^2 k^2) + 52 \sqrt{g} H^5 (3 + H^2 k^2) U^2 \right) d^3 \Big) \Big/ \Big(96 \sqrt{g} H (3 + H^2 k^2) U^2 + g H \left(198 \sqrt{g} H(3 + H^2 k^2) + 52 \sqrt{g} H^5 (3 + H^2 k^2) U^2 \right) d^3 \Big) \Big/ \Big(96 \sqrt{g} H (3 + H^2 k^2)^{9/2} \Big) - \Big(\Big(k^7 \left(\sqrt{3} \sqrt{g} H(3 + H^2 k^2) + (3 + H^2 k^2) U\right)^3 \left(576 \sqrt{g} H(3 + H^2 k^2) U^2 + 64 k^4 \sqrt{g} H^9 (3 + H^2 k^2) U^2 + g H \left(225 \sqrt{g} H(3 + H^2 k^2) + \sqrt{3} (693 + 450 H^2 k^2) U^2 \right) \Big) d^4 \Big) \Big/ \Big(96 \left(\sqrt{g} H (3 + H^2 k^2)^{3/2} \right) + O[dt]^3 \Big) dx^2 + \left(\frac{i k^4 \left(\sqrt{3} g H(3 + H^2 k^2) U^2\right) \right) d^4 \right) \Big/ \Big(96 \left(\sqrt{g} H (3 + H^2 k^2)^{3/2} \right) + O[dt]^3 \Big) dx^2 + \left(\frac{i k^4 \left(\sqrt{3} g H(3 + H^2 k^2) U^2\right) \right) d^4 \Big) \Big/ \Big(96 \left(\sqrt{g} H (3 + H^2 k^2)^{3/2} \right) + O[dt]^3 \Big) dx^2 + \left(\frac{i k^4 \left(\sqrt{3} g H(3 + H^2 k^2) U^2\right) \right) d^4 \Big) \Big/ \Big(96 \left(\sqrt{g} H (3 + H^2 k^2)^3 \right) + O[dt]^3 \Big) dx^2 + \left(\frac{i k^4 \left(\sqrt{3} g H(3 + H^2 k^2) U^2\right) \right) d^4 \Big) \Big/ \Big(96 \left(\sqrt{g} H (3 + H^2 k^2)^3 \right) + O[dt]^3 \Big) dx^2 + \left(\frac{i k^4 \left(\sqrt{3} g H(3 + H^2 k^2) U^2\right) + i 6 \left(9 \sqrt{g} H(3 + H^2 k^2) U^2\right) \Big) \Big) dx \Big) \Big/ \Big(128 \left(\sqrt{g} H (3 + H^2 k^2)^{3/2}\right) + O[dt]^3 \Big) dx^2 + \left(\sqrt{g} H^3 H^3 H^2 h^2 U^3 + i 6 \sqrt{g} H^3 (3 + H^2 k^2) U^3 \Big) \Big) dx \Big) \Big/ \Big(128 \sqrt{g} H (3 + H^2 k^2)^{3/2} \Big) + \left(k^6 \left(9 \sqrt{3} g^3 H^3 (3 + H^2 k^2) U + 3 \sqrt{g} H^3 (3 + H^2 k^2) U^3 \right) \right) dx^2 \Big) \Big/ \Big(128 \sqrt{g} H (3 + H^2 k^2)^{3/2} \Big) + \left(k^6 \left(\sqrt{3} \sqrt{g} H(3 + H^2 k^2) U + 3 \sqrt{g} H^3 (3 + H^2 k^2) U^3 \right) \Big) dx^3 \Big) \Big/ \Big(128 \sqrt{g} H (3 + H^2 k^2)^{3/2} \Big) + \left(k^6 \left(\sqrt{3} \sqrt{g} H(3 + H^2 k^2) U + 3 \sqrt{g} H^3 (3 + H^2 k^2) U^3 \right) \Big) dx^3 \Big) \Big/ \Big(128 \sqrt{g} H (3 + H^2 k^2)^{3/2} \Big) + \left(k^6 \left(\sqrt{3} \sqrt{g} H(3 + H^2 k^2) U + 4 \sqrt{g} H^3 (3 + H^2 k^2) U^3 \right) \Big) dx^3 \Big) \Big/ \Big(128 \sqrt{g} H (3 + H^2 k^2)^{3/2} \Big) + O[dt]^3 A + O[dt]^3 \Big) + O[dt]^3 A + O[dt]^3 \Big) + O[dt]^$$

$$\begin{split} \left(\left(\left(\left(3 \sqrt{3} \right) \right) \left(g H \left(344 \right) + 146 H^+ K^+ + 19 H^+ K^+ \right) + 220 \left(\left(\sqrt{9} \right) \left(g H \left(3 + H^+ K^- \right) \right) + 0 K^+ \sqrt{9} \left(g H^+ \left(9 + H^+ K^+ \right) \right) + 4 \left(g H^0 \left(3 \right) \left(g H \left(18432 \sqrt{g} \left(13 + H^2 k^2 \right) \right) U \right) \right) \right) \left(\left(30 \ 720 \sqrt{g} H \left(3 + H^2 k^2 \right)^{5/2} \right) + 4 \left(1381 \sqrt{3} \right) H^2 k^2 U + 1381 \sqrt{3} \left(116 k^6 U + k^4 \left(960 \sqrt{g} \right) H^9 \left(3 + H^2 k^2 \right) + 13717 \sqrt{3} \right) H^4 U \right) \right) + 128 \left(837 \sqrt{g} H \left(3 + H^2 k^2 \right) U^2 + 279 k^4 \sqrt{g} H^9 \left(3 + H^2 k^2 \right) U^2 + 31 k^6 \sqrt{g} H^{13} \left(3 + H^2 k^2 \right) U^2 + 279 k^4 \sqrt{g} H^9 \left(3 + H^2 k^2 \right) U^2 \right) \right) \right) dI \right) \right) \left(92 160 \sqrt{g} H \left(3 + H^2 k^2 \right)^{-2} \right) - \left(\left(k^2 \left(9 \sqrt{3} \right) g^2 H^2 \left(12 999 + 6258 H^3 k^2 + 775 H^4 k^4 \right) + g HU \left(617 661 \sqrt{3} \right) H^2 k^2 U + 20551 \sqrt{3} \right) H^6 k^6 U + 81 \left(5888 \sqrt{g} H \left(3 + H^2 k^2 \right) + 8053 \sqrt{3} \right) U \right) + 3 k^4 \left(12 288 \sqrt{g} H^9 \left(3 + H^2 k^2 \right) U^3 + 86 k^6 \sqrt{g} H^{13} \left(3 + H^2 k^2 \right) \right) \right) \\ U^3 + 9 k^2 \left(229 \sqrt{g^3} H^7 \left(3 + H^2 k^2 \right) U + 258 \sqrt{g} H^8 \left(3 + H^2 k^2 \right) U^3 \right) \right) \right) \right) \\ dt^2 \right) \left(92 160 \left(\sqrt{g} H \left(3 + H^2 k^2 \right) U^3 + 774 k^4 \sqrt{g} H^9 \left(3 + H^2 k^2 \right) U^3 + 86 k^6 \sqrt{g} H^{13} \left(3 + H^2 k^2 \right) \right) \right) \right) \\ dt^2 \right) \left(92 160 \left(\sqrt{g} H \left(3 + H^2 k^2 \right) U^3 + 774 k^4 \sqrt{g} H^9 \left(3 + H^2 k^2 \right) U^3 + 86 k^6 \sqrt{g} H^{13} \left(3 + H^2 k^2 \right) \right) \right) \right) \\ dt^2 \right) \left(92 160 \left(\sqrt{g} H \left(3 + H^2 k^2 \right) U^3 \right) - \frac{1}{50729 \sqrt{g} H^7 \left(3 + H^2 k^2 \right)} U + 258 \sqrt{g} H^8 \left(3 + H^2 k^2 \right) U^3 \right) \right) \right) \right) \\ dt^2 \right) \left(92 160 \left(\sqrt{g} H \left(3 + H^2 k^2 \right) U^3 \right) + 4423 \sqrt{3} \left(3 + H^2 k^2 \right) U + 258 \sqrt{g} H^3 \left(3 + H^2 k^2 \right) U^4 + g H^2 \left(8332 \sqrt{g} H \left(3 + H^2 k^2 \right) + 423 \sqrt{3} \left(3 + H^2 k^2 \right) U \right) \right) \right) \right) \\ dt^2 \left(1832 \sqrt{g} H \left(3 + H^2 k^2 \right) + 4423 \sqrt{3} \left(3 H^2 U + 2592 \sqrt{g} H \left(3 + H^2 k^2 \right) U^4 + g H^2 \left(8322 \sqrt{g} H \left(3 + H^2 k^2 \right) + 776 \sqrt{g} H^3 \left(3 + H^2 k^2 \right) U \right) \right) \right) \right) \\ 27 k^2 \left(353 19 \sqrt{3} \left(3 H^2 U + 91580 \sqrt{3} \right) \left(3 H^3 U + 3 H^2 U + 3 H^2 U + 3 H^2 U \right) \right) \right) \right) dt^3 + \frac{2}{2100 \sqrt{g} H^3 \left(3 + H^2 k^2 \right)} \left(3 H^3 \left(3 + H^2 k^2 \right) + 155 \sqrt{g}$$

$$9k^{4} \left(7035 \sqrt{g^{2}H^{13}(3+H^{2}k^{2})} + 153703 \sqrt{3} \frac{g^{2}H^{6}U + 254208 \sqrt{g}H^{9}(3+H^{2}k^{2})}{gH^{5}U^{2}(347651 \sqrt{g}H(3+H^{2}k^{2}) + 700818 \sqrt{3} U))\right) dr^{4} + O[dt]^{5} dx^{4} + O[dx]^{5},$$

$$\left[i\frac{\left[-\sqrt{3} \frac{1}{8} \sqrt{gH(3+H^{2}k^{2})} + 34kU+H^{2}k^{2}\right]}{2(3+H^{2}k^{2})^{2}}dx - \frac{1}{3(3+H^{2}k^{2})^{2}} \left(k^{3} \left(-\sqrt{3} \sqrt{g}H(3+H^{2}k^{2}) + (3+H^{2}k^{2})U\right)\right)\right) dr^{2} - \frac{1}{3(3+H^{2}k^{2})^{2}}ik^{4} \left(-\sqrt{3} \sqrt{g}H(3+H^{2}k^{2}) + (3+H^{2}k^{2})U\right)\right) dr^{2} - \frac{1}{3(3+H^{2}k^{2})^{2}}ik^{4} \left(-\sqrt{3} \sqrt{g}H(3+H^{2}k^{2}) + 3(3+H^{2}k^{2})U\right)\right) dr^{2} - \frac{1}{3(3+H^{2}k^{2})^{2}}ik^{4} \left(-\sqrt{3} \sqrt{g}H(3+H^{2}k^{2}) + 3(3+H^{2}k^{2})U\right) + U^{2} \left(-9\sqrt{3} \sqrt{g}H(3+H^{2}k^{2}) + 3(3+H^{2}k^{2})U\right) + U^{2} \left(-9\sqrt{3} \sqrt{g}H(3+H^{2}k^{2}) + 9U + H^{4}k^{4}U - 3k^{2} \left(\sqrt{3} \sqrt{g}H^{5}(3+H^{2}k^{2}) - 2H^{2}U\right)\right)\right) dr^{3} + O[dt]^{5} + U^{2} \left(-12\sqrt{3} \sqrt{g}H(3+H^{2}k^{2}) + 9U + H^{4}k^{4}U + k^{2} \left(-4\sqrt{3} \sqrt{g}H^{5}(3+H^{2}k^{2}) + 6H^{2}U\right)\right)\right) dr^{4} + O[dt]^{5} + U^{2} \left(-12\sqrt{3} \sqrt{g}H(3+H^{2}k^{2}) + 9U + H^{4}k^{4}U + k^{2} \left(-4\sqrt{3} \sqrt{g}H^{5}(3+H^{2}k^{2}) + 6H^{2}U\right)\right)\right) dr^{2} + O[dt]^{5} + U^{2} \left(-12\sqrt{3} \sqrt{g}H(3+H^{2}k^{2}) + 9U + H^{4}k^{4}U + k^{2} \left(-4\sqrt{3} \sqrt{g}H(3+H^{2}k^{2}) + 6H^{2}U\right)\right)\right) dr^{2} + O[dt]^{5} + U^{2} \left(-9\sqrt{3} \sqrt{g}H(3+H^{2}k^{2}) + 9U + H^{4}k^{4}U - 3k^{2} \left(\sqrt{3} \sqrt{g}H(3+H^{2}k^{2}) + 3(3+H^{2}k^{2})U\right)\right) dr^{2} + O[dt]^{5} + U^{2} \left(-9\sqrt{3} \sqrt{g}H(3+H^{2}k^{2}) + 9U + H^{4}k^{4}U - 3k^{2} \left(\sqrt{3} \sqrt{g}H^{5}(3+H^{2}k^{2}) - 2H^{2}U\right)\right)\right) dr^{2} + O[dt]^{5} + U^{2} \left(-9\sqrt{3} \sqrt{g}H(3+H^{2}k^{2}) + 9U + H^{4}k^{4}U - 3k^{2} \left(\sqrt{3} \sqrt{g}H^{5}(3+H^{2}k^{2}) - 2H^{2}U\right)\right)\right) dr^{2} + O[dt]^{5} + O[d$$

$$\frac{\left(ik^{3}\left(gH(3+3iF^{2}k^{3})-i6\left[3\sqrt{gH(3+iF^{2}k^{3})}\right)-ik^{2}\sqrt{gH^{2}(3+iF^{2}k^{3})}\right)}{98\sqrt{gH}\left(3+iF^{2}k^{3}\right)} + \\ \frac{\left(ik^{4}\left(gH\left(-144\sqrt{gH(3+H^{2}k^{2})}\right)+\sqrt{3}\left(369+234H^{2}k^{2}+37H^{4}k^{4}\right)U\right)-4}{4\left(63\sqrt{gH(3+H^{2}k^{2})}\right)^{2}+7k^{4}\sqrt{gH^{9}\left(3+H^{2}k^{2}\right)}\right)U^{2}+4} \\ \frac{3k^{2}\left(3\sqrt{g^{3}H^{2}\left(3+H^{2}k^{2}\right)}\right)U^{2}+7k^{4}\sqrt{gH^{9}\left(3+H^{2}k^{2}\right)}\right)U^{2}+4}{3k^{2}\left(3\sqrt{g^{3}H^{2}\left(3+H^{2}k^{2}\right)}\right)U^{2}+H^{2}k^{2}\right)U\left(gH\left(171\sqrt{gH(3+H^{2}k^{2})}\right)U^{2}\right)\right)dI\right)/\left(96\sqrt{gH}\left(3+H^{2}k^{2}\right)U^{2}+49H^{4}k^{4}\right)U\right)+5\left(72\sqrt{gH\left(3+H^{2}k^{2}\right)}\right)U^{2}+8k^{4}\sqrt{gH^{9}\left(3+H^{2}k^{2}\right)}\right)U^{2}+49H^{4}k^{4}\right)U\right)+5\left(72\sqrt{gH\left(3+H^{2}k^{2}\right)}\right)U^{2}+8k^{4}\sqrt{gH^{9}\left(3+H^{2}k^{2}\right)}\right)U^{2}+49H^{4}k^{4}\right)U\right)+5\left(72\sqrt{gH\left(3+H^{2}k^{2}\right)}\right)U^{2}+49H^{4}k^{4}\right)U\right)+40H^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}k^{4}U^{2}+8h^{4}$$

$$\begin{split} & 5 \left(288 \sqrt{g\,H}\left(3 + H^2\,k^2\right) \, U^3 + 32\,k^4 \sqrt{g\,H^9}\left(3 + H^2\,k^2\right) \, U^3 + 40\,k^2 \left(39\,\sqrt{g^3\,H^2}\left(3 + H^2\,k^2\right) \, U + 64\,\sqrt{g\,H^3}\left(3 + H^2\,k^2\right) \, U^3\right)\right)\right) d^2\right) / \\ & \left(384 \left(\sqrt{g\,H^3}\left(3 + H^2\,k^2\right)^{3/2}\right)\right) - \left(i\,k^8 \left(\sqrt{3}\,\sqrt{g\,H}\left(3 + H^2\,k^2\right) - \left(3 + H^2\,k^2\right) \, U^2\right)\right) \left(5\,\sqrt{3}\,g^2\,H^2\right) \\ & \left(45 + 11\,H^2\,k^2\right) + g\,H\,U \left(-990\,\sqrt{g\,H}\left(3 + H^2\,k^2\right) + \sqrt{3}\,\left(1449 + 930\,H^2\,k^2 + 149\,H^4\,k^4\right) \, U\right) - \\ & 2 \left(360\,\sqrt{g\,H}\left(3 + H^2\,k^2\right) \, U^3 + 40\,k^4\,\sqrt{g\,H^9}\left(3 + H^2\,k^2\right) \, U^3 + k^2\left(137\,\sqrt{g^3\,H^7}\left(3 + H^2\,k^2\right) \, U + \right) \\ & 240\,\sqrt{g\,H^3}\left(3 + H^2\,k^2\right) \, U^3\right)\right) d^4\right) / \left(128\,\sqrt{g\,H}\,\left(3 + H^2\,k^2\right)^{9/2}\right) + Ofdtl^5 \right) dx^3 + \\ & \left(k^5\left(-3\,\sqrt{3}\,g\,H\left(543 + 146\,H^2\,k^2 + 15\,H^4\,k^4\right) + 256\left(9\,\sqrt{g\,H}\left(3 + H^2\,k^2\right) + 6\,k^2\,\sqrt{g\,H^3}\left(3 + H^2\,k^2\right) + \right) \\ & \left(i\,k^6\left(-3\,g\,H\left(-18\,432\,\sqrt{g\,H}\left(3 + H^2\,k^2\right) + 51\,039\,\sqrt{3}\,U + 45\,735\,\sqrt{3}\,H^2\,k^2\,U + \right) \\ & 1381\,\sqrt{3}\,H^6\,k^6\,U + k^4\left(-960\,\sqrt{g\,H^9}\left(3 + H^2\,k^2\right) \, U^2 + 31\,k^6\,\sqrt{g\,H^{13}}\left(3 + H^2\,k^2\right) \, U^2 + \\ & 27\,k^2\left(7\,\sqrt{g^3\,H^3}\left(3 + H^2\,k^2\right) + 31\,\sqrt{g\,H^9}\left(3 + H^2\,k^2\right) \, U^2\right)\right) dt\right) / \\ & \left(92\,160\,\sqrt{g\,H}\,\left(3 + H^2\,k^2\right)^{9/2}\right) + \left(k^2\left(9\,\sqrt{3}\,g^2\,H^2\left(12\,999 + 6258\,H^2\,k^2 + 775\,H^4\,k^4\right) + \right) \\ & 8053\,\sqrt{3}\,U\right) - 3\,k^4\left(12\,288\,\sqrt{g\,H^9}\left(3 + H^2\,k^2\right) \, U^3\right)\right) dt^2\right) / \\ & \left(92\,160\,\sqrt{g\,H}\,\left(3 + H^2\,k^2\right)^{3/2}\right) - \frac{1}{30720\,\sqrt{g\,H}}\,\left(3 + H^2\,k^2\right) \, U^3 + 86\,k^6\,\sqrt{g\,H^{13}}\,\left(3 + H^2\,k^2\right) \, U^3 + \right) \\ & 9\,k^2\left(229\,\sqrt{g^3\,H^2}\left(3 + H^2\,k^2\right) \, U + 2588\,\sqrt{g\,H^9}\left(3 + H^2\,k^2\right) \, U^3\right)\right) dt^2\right) / \\ & \left(92\,160\,\sqrt{g\,H}\,\left(3 + H^2\,k^2\right)^{3/2}\right) - \frac{1}{30720\,\sqrt{g\,H}}\,\left(3 + H^2\,k^2\right) \, U\right) + \\ & 243\left(832\,\sqrt{g\,H}\left(3 + H^2\,k^2\right)^{3/2}\right) - 4423\,\sqrt{3}\,g^2\,H^2\,U + 2592\,\sqrt{g\,H\left(3 + H^2\,k^2\right)} \, U^3\right)\right) dt^2\right) / \\ & \left(92\,160\,\sqrt{g\,H}\,\left(3 + H^2\,k^2\right)^{3/2}\right) - 4423\,\sqrt{3}\,g^2\,H^2\,U + 2592\,\sqrt{g\,H\left(3 + H^2\,k^2\right)} \, U^3\right) + \\ & 243\left(832\,\sqrt{g\,H}\left(3 + H^2\,k^2\right)^{3/2}\right) - 4423\,\sqrt{3}\,g^2\,H^2\,U + 2592\,\sqrt{g\,H\left(3 + H^2\,k^2\right)} \, U^3\right)\right) dt^2\right) / \\ & \left(92\,160\,\sqrt{g\,H}\,\left(3 + H^2\,k^2\right)^{3/2}\right) - 4423\,\sqrt{3}\,g^2\,H^2\,U + 2592\,\sqrt{g\,H\left(3 + H^2\,k^2\right)} \, U^3\right) + \\ & 243\left(832\,\sqrt{g\,H}\left(3 + H^2\,k^2\right)$$

 $288 \left(5 \, \sqrt{g^5 \, H^{13} \left(3 + H^2 \, k^2\right)} \, + 162 \, \sqrt{g \, H^9 \left(3 + H^2 \, k^2\right)} \, \, U^4\right)\!)\right) dt^3 - \frac{1}{92 \, 160 \left(\sqrt{g \, H} \, \left(3 + H^2 \, k^2\right)^{11/2}\right)}$ $\left(k^{9} \left(\sqrt{3} \sqrt{g \, H \left(3+H^{2} \, k^{2}\right)}\right. - \left(3+H^{2} \, k^{2}\right) \, U\right) \left(k^{8} \, U^{3} \left(-111 \, 559 \, \sqrt{3} \, g \, H^{9} +42 \, 368 \, \sqrt{g \, H^{17} \left(3+H^{2} \, k^{2}\right)} \, \, U\right) + \left(111 \, 49 \, k^{2} \, k^{2}$ $27\,{k}^{2} \left(18\,078\,\sqrt{\,g^{5}\,H^{9} \left(3\,+\,H^{2}\,k^{2}\right)}\,\,-\,172\,047\,\sqrt{\,3\,}\,\,g^{2}\,H^{4}\,U\,+\,372\,075\,\sqrt{\,g^{3}\,H^{7} \left(3\,+\,H^{2}\,k^{2}\right)}\,\,U^{2}\,-\,172\,047\,\sqrt{\,g^{3}\,H^{2} \left(3\,+\,H^{2}\,k^{2}\right)}\right)$ $477\,940\,\sqrt{3}\,g\,H^3\,U^3+169\,472\,\sqrt{g\,H^5\left(3+H^2\,k^2\right)}\,\,U^4\Big)+$ $9\,{k}^{4} \left(7035\,\sqrt{{g}^{5}\,{H}^{13} \left(3+{H}^{2}\,{k}^{2}\right)}\right. \\ \left.-153\,703\,\sqrt{3}\,\,{g}^{2}\,{H}^{6}\,{U}+254\,208\,\sqrt{{g}\,{H}^{9} \left(3+{H}^{2}\,{k}^{2}\right)}\right. \\ \left.{U}^{4}+{H}^{2}\,{k}^{2}\right) \left(3+{H}^{2}\,{k}^{2}\right) \left(3+{H}^{2}\,{k}^{2}\right) \left(3+{H}^{2}\,{k}^{2}\right) \\ \left(3+{H}^{2}\,{k}^{2}\right) \left(3+{H}^{2}\,{k}^{2}\right) \left(3+{H}^{2}\,{k}^{2}\right) \\ \left(3+{H}^{2}\,{k}^{2}\right) \left(3+{H}^{2}\,{$ $g\,H^5\,U^2\left(347\,651\,\sqrt{g\,H\left(3+H^2\,k^2\right)}\right. - 700\,818\,\sqrt{3}\,|U|\right) +$ $81 \left(11\,603\,\sqrt{\,g^5\,H^5\left(3+H^2\,k^2\right)}\right. \\ \left.-63\,917\,\sqrt{\,3}\right. \, g^2\,H^2\,U + 42\,368\,\sqrt{\,g\,H\left(3+H^2\,k^2\right)}\right. \, U^4 + 23\,68\,\sqrt{\,g\,H\left(3+H^2\,k^2\right)} \, U^4 + 23\,68\,\sqrt{$ $g H U^{2} \left(132513 \sqrt{g H \left(3 + H^{2} k^{2}\right)} - 122207 \sqrt{3} U\right)\right) 3 \; k^6 \; U \left(45 \; 573 \; \sqrt{3} \; \; g^2 \; H^8 - 169 \; 472 \; \sqrt{g \; H^{13} \left(3 \; + \; H^2 \; k^2\right)} \; \; U^3 \; + \right.$

Out[196]= Omega error ||

 $\label{left} $$k^2+3\right)^2}-\frac{h^2 \left(\left(h^2 k^2+3\right) U+\sqrt{3} \left(h^2 k^2+3\right)\right)}\right)}$ $\left(\frac{3 \text{ g H+U left(left(H^2 k^2+3 \text{ right) U+2 sqrt{3} sqrt{g H \left(H^2 k^2+3 \text{ right)} right) right)}}{1}\right)$ $k^2+3\right) \left(H^2 + \frac{1}{2} \left(H^2 + \frac{1}{2} \left(H^2 + \frac{1}{2} \right) \right) \right) \left(H^2 + \frac{1}{2} \left(H^2 + \frac{1}{2} \left(H^2 + \frac{1}{2} \right) \right) \right) \right)$ $k^2+9 \left(U+\sqrt{3} \right) \left(U+\sqrt{3} \right$ $\label{eq:left} $\operatorname{H}\left(H^2 k^2+3\right) H\right) + \frac{dt}^3}{4 \left(H^2 k^2+3\right)^3} + \frac{k^5 \left(H^2 k^5\right)^3}{4 \left(H^2 k^5\right)^3} + \frac{k^5 \left$ $k^2+3\right\} \ U+\sqrt{3} \ H \left(H^2 k^2+3\right) \ U+C H^2 U k^4+2 \left(H^3 U H^2+2 H^2 U h^4 U h^4+2 H^2 U h^4+2 U h^4+2$ $U^3+6 g H \left(3 \left(\frac{4^2 + 3\right)}{U+2 \left(\frac{4}{2} \right)} \right) + \left(\frac{4^2 + 3\right)}{U+2 \left(\frac{4}{2} \right)}$ $H^2\left(\frac{dt}^4}{5 \left(\frac{dt}^5\right)} + \left(\frac{dt}^5\right) + \left(\frac{dt}^5\right)$ $\label{left} $\left(2 U + \sqrt{\frac{2} + \frac{4^2 + 3}{\sinh(1+\frac{2} + 2+3)}\right) + \frac{6^2 + \frac{4^2 + 3}{\sinh(1+\frac{2} + 2+3)}}{\sinh(1+\frac{2} + 2+3)} \right) $$$ $H \left(\frac{h^2 k^2+3\right) \left($ $\left(H^2 k^2+3\right)^{3/2}+\frac{k^4 \left(\sqrt{3} gH+2 \right)^2 H^2 k^2+3\right)^{3/2}+\frac{k^4 \left(\sqrt{3} gH+2 \right)^2 H^2 k^2+3\right)^{3/2}$ $U = H \left(\frac{3 g H + U \left(\frac{4^2 k^2 + 3 \right) U + 2 \left(\frac{4^2 k^2 + 3 \right) \left(\frac{4^2 k^2 + 3$ $\t text{dt}^2}{4 \operatorname{Sqrt}{g H} \left(h^2 k^2 + 3\right)^{3/2}} - \frac{h^5 \operatorname{Heft}(k^5 \operatorname{Heft}(sqrt{3}) g H + 2 \operatorname{Sqrt}{g H} \right)^{3/2}} - \frac{h^5 \operatorname{Heft}(sqrt{3}) g H + 2 \operatorname{Heft}(sqrt{3$ $\left(H^2 k^2+3\right) U\right) \left(H^2 k^2+3\right) U\right)$ $k^2+3\left(U+\sqrt{3} \right) \left(U+\sqrt{3} \right$ $k^2 U H^3+9 U H+\sqrt{3} \left(H \left(h^2 k^2+3\right) H\right) + (k^2 U H^3+9 U H+\sqrt{3} \left(h^2 k^2+3\right) H\right)$ $H} \left(\frac{h^2 k^2+3\right)^{5/2}\right) - \frac{k^6 \left(\frac{h^2 k^2+3\right)^{5/2}}{h^2 k^2+3\right)^{5/2}}$ $U + \frac{1}{2} \left(\frac{H^2 k^4 + 2 \left(U k^4 + 2$ $U+12 \sqrt{3} \sqrt{4^2 + 3 \cdot g} U-3+6 g H \left(H^2 k^2+3\right) U+2$ $\sqrt{3} \right) \left(H \left(\frac{^2 k^2 + 3\right)} \right) U+9 g^2 H^2\right) \left(\frac{4}{4} \right) \left(\frac{4}$

 $k^2+3\right)^{5/2}+O\left(\frac{t}{3} gH\right)^{5/2}+O\left(\frac{t}{3} gH\right)^{5/2}$ $k^2+13\right) + 16 \left(\frac{4^2 k^2+3\right) k^2+3 \left(\frac{4$ $U = \frac{3}{2} \left(\frac{4 \left(\frac{4^2 k^2 + 3\right)^{3/2} \cdot (3^4 \cdot (3$ H^4 k^4+234 H^2 k^2+369\right) U+144 \sqrt{g H \left(H^2 k^2+3\right)\right)+4 \left(7 \sqrt{g H^9} $\left(H^2 k^2+3\right) U^2 k^4+3 \left(H^5 \left(H^2 k^2+3\right) U^2+3 \right) U^2+3$ $\left(H^2 k^2+3\right)\right) \ h^2+63 \ gH\left(H^2 k^2+3\right) \ U^2\right) \ h^2+63 \ h^$ $\$ \\ \left(H^2 k^2+3\right)^{5/2}}+\\ frac{k^5} \left(\left(H^2 k^2+3\right) U+\\ sqrt{3} \\ gH $\left(\frac{H^2 k^2+3\left(H^2 k^2+3\left(\frac{H^2 k^2+3\left(H^2 k^2+3\left(\frac{H^2 k^2+3\left(H^2 k^2+3\left(\frac{H^2 k^2+3\left(\frac{H^2 k^2+3\left(H^2 k^2+3\left(\frac{H^2 k^2+3\left(H^2 h^2+3\left(H^2 h^2+3\left(H^2 k^2+3\left(H^2 h^2+3\left(H^2$ $\left(H^2 k^2+3\right)\right) + \left(H^2 k^2+3\right) + \left(H^2 k^2+$ $\$ \sqrt{g H^5 \left(H^2 k^2+3\right)} U^2+3 \sqrt{g^3 H^7 \left(H^2 k^2+3\right)} \right) \k^2+72 \sqrt{g H} $\label{left(H^2 k^2+3\wedge light)} $$ \operatorname{L}^2(H^2 k^2+3\wedge H^2 k^2+3\wedge H$ $k^6 \left(H^2 k^2 + 3\right) + H \left($ $\left(H^2 k^2+3\right) U^2 k^4+6 \left(52 \right) H^5 \left(H^2 k^2+3\right) U^2+9 \right) U^2+9$ $\left(H^2 k^2+3\right) \ h^2+468 \ gH \left(H^2 k^2+3\right) \ U^2+g \ h^2+3 \ h^2+468 \ h$ $H^4 k^4 + 378 H^2 k^2 + 585 \cdot U + 198 \cdot qrt \{g H \cdot (H^2 k^2 + 3 \cdot right) \cdot right) \cdot text \{dt\}^3\} \{96 + 198 \cdot qrt \{g H \cdot (H^2 k^2 + 3 \cdot right) \cdot right) \cdot text \{dt\}^3\} \{96 + 198 \cdot qrt \{g H \cdot (H^2 k^2 + 3 \cdot right) \cdot right) \cdot right) \cdot text \{dt\}^3\} \{96 + 198 \cdot qrt \{g H \cdot (H^2 k^2 + 3 \cdot right) \cdot right)$ $\$ \sqrt{g H} \left(H^2 k^2+3\right)^{9/2}}-\frac{\\left(k^7 \\left(\\left(H^2 k^2+3\right) U+\\sqrt{3} \\sqrt{g}} $H \left(\frac{H^2 k^2+3\right)}{0.0000}$ $\$ \sqrt{g H^5 \left(H^2 k^2+3\right)} U^2+21 \sqrt{g^3 H^7 \left(H^2 k^2+3\right)}\right) k^2+576 $\sqrt{g} H \left(\frac{H^2 k^2 + 3\right)} U^2 + g H \left(\frac{3}{4} \right) \left(\frac{H^2 k^2 + 3\right)} U^2 + g H \left(\frac{3}{4} \right) \left(\frac{3}{4} \right) \left(\frac{4}{4} \right) U^2 + g H \left(\frac{3}{4} \right) \left(\frac{3}{4} \right) U^2 + g H \left$ $U+225 \left(H \left(H^2 k^2+3\right) \right)\right) \left(H^2 k^2+3\right) \left($ $k^2+3\right)$ Uright) $384 \sqrt{g} H$ \left($4^2 k^2+3\right)$ \right)3/2 -\frac{\left($4^5 \$ $\left(\frac{3}{H^2 + 126 H^2 k^2 + 207 \right) U + 72 \left(H \left(\frac{4 k^2 + 3 \right) \right) \left(\frac{3}{H^2 k^2 + 207 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U + 72 \left(\frac{3}{H^2 k^2 + 3 \right) U$ $\left(\frac{4^2 + \sqrt{2 + \sqrt{2 + 3 \cdot ght}}}{U^2 k^2 + \left(\frac{6 \cdot \sqrt{2 + 3 \cdot ght}}{U^2 k^2 + \sqrt{2 + 3 \cdot ght}}\right)}\right)$ $H^7 \left(H^2 k^2+3\right) \$ $H^2 k^2+13\right) H^2+5 g U \left(\frac{13 H^4 k^4+82 H^2 k^2+129\right) U+96 \left(\frac{13 H^4 k^4+82 H^2 k^2+129\right) U+96 \right)$ $\left(H^2 k^2+3\right)\right) H+32 \left(H^2 k^2+3\right) U^3 k^4+2 \left(Sqrt{g H^9 \left(H^2 k^2+3\right)\right) U^3 k^4+2 \right)$ $H^5 \left(H^2 k^2+3\right) U^3+2 U^3+2$ $\label{left(H^2 k^2+3\wedge ight)} $$ U^3\right) text{dt}^2{128 \q H} \left(H^2 k^2+3\right)^{5/2}+\frac{k^7}{2}(h^7 k^2+3h^2) + \frac{k^7}{2}(h^7 k^2+3h^2) + \frac{k^7}{2}(h^7$ $\left(\left(\frac{H^2 k^2+3\right)}{U+\sqrt{3} \sqrt{2}}\right) U+\sqrt{3}$ $\left(5 \text{ H}^2 \text{ k}^2+2\right) \text{ H}^2+3 \text{ g U }\left(\frac{3} \left(5 \text{ H}^4 \text{ k}^4+646 \text{ H}^2 \text{ k}^2+1011\right)\right)$ $U+717 \cdot qt\{g + \left(\frac{h^2 k^2+3\right)}{t+5} + \frac{1}{32} \cdot qt\{g + \frac{h^2 k^2+3\right)} U^3$ $k^4+3 \left(64 \right) U^3+39 \left(64 \right) U^3+3$ $U \rightarrow k^2 + 288 \left(H \left(H^2 k^2 + 3 \right) \right) U^3 \right) \left(H^3 \left(H^3 k^2 + 3 \right) \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right) \\ U \rightarrow k^2 + 288 \left(H^3 k^2 + 3 \right)$ $\label{left} $$\left(H^2 k^2 + 3\right)^{7/2} + \frac{i k^8 \left(H^2 k^2 + 3\right) U + \sqrt{3} \left(H^2 k^2 + 3\right) U + \sqrt{$ $\label{eq:continuity} $$ \frac{k^2+3\right}\theta^2 \left(80 \right)^2 \left(80 \right$ $\left(H^2 k^2+3\right) U^3+5 \left(H^2 k^2+45\right) U^3+5 \left(H^2 k^2+45\right) U^3+5 \left(H^2 k^2+45\right) U^3+6 U^3+6$ $H^4 k^4+930 H^2 k^2+1449 \cdot U+990 \cdot H^2 k^2+3 \cdot H^2 k$ $\left(H^2 k^2+3\right)^{9/2}+O\left(t^3-t^4\right) \cdot \left(H^2 k^2+3\right)^{9/2}+O\left(t^4\right)^{5\right) \cdot \left(H^2 k^3-t^4\right) \cdot \left(H^2 k^3-t^4\right)^{9/2}+O\left(t^4\right)^{9/2}$ $\sqrt{3} g H \left(15 H^4 k^4+146 H^2 k^2+543\right) +256 \left(5 H^9 \left(4.5 H^2 k^2+3\right)\right)$

1.44 - C \ - ---4(- 1145 \ 1-4/144 1.40 - 2\-::-1.40 1.40 - 0 \ - ---4(- 11 \ 1-4/140 1.40 - 2\-::-1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.40 \ 1.

 $K^{\prime}4+\sigma \left(Sqrt(g,H^{\prime})^{2} \right) \left(H^{\prime}(H^{\prime})^{2} \left(K^{\prime}(2+3) \right) \left(H^{\prime}(H^{\prime})^{2} \right) \left(H^{\prime}(H^{\prime})^{2}$ $\$ \\left(\(H^2 k^2+3\\right)^{5/2}\}+\\\rightac\(i k^6 \\left(3 g H \\left(1381 \\sqrt{3} H^6 U k^6+\\left(13717 H^6 U k^6+\\right)^{1/2}\}) \sqrt{3} U H^4+960 \sqrt{g H^9 \left(H^2 k^2+3\right)\right) k^4+45735 \sqrt{3} H^2 U k^2+51039 $\$ \\ \quad \\ H\\left(H^2 \\ \^2+3\\ \right)\\ H(31 \\ \\ H^{13} \\ H^{13} \\ H^2 \ $k^2+3\right) U^2 k^6+279 \left(H^9 \left(H^2 k^2+3\right) \right) U^2 k^4+27 \left(1 \right)$ $\left(H^2 k^2+3\right) U^2+7 \left(H^2 k^2+3\right) V^2+3\right) U^2+7 \left(H^2 k^2+3\right) V^2+3\right)$ \left(9 \sqrt{3} g^2 \left(775 H^4 k^4+6258 H^2 k^2+12999\right) H^2+g U \left(20551 \sqrt{3} H^6 U k^6+3 \left(65021 \sqrt{3} U H^4+12288 \sqrt{g H^9 \left(H^2 k^2+3\right)}\right) k^4+617661 \sqrt{3} H^2 U k^2+81 \left(8053 \sqrt{3} U+5888 \sqrt{g H \left(H^2 k^2+3\right)\right)\right)\right) H+128 \left(86 $\$ \\sqrt{g H^{13} \\left(H^2 k^2+3\right)} U^3 k^6+774 \\sqrt{g H^9 \\left(H^2 k^2+3\right)} U^3 k^4+9 H} \left($H^2 k^2+3\right)^{7/2}\right) - \frac{i k^8 \left(U^3 \left(U^3 \right) + 3 grt{3} g H^9+7776 \right)}{1}$ $H^{17} \left(H^2 k^2 + 3\right) U\right) V \left(h^8 + 3 U \right) \left(h^8 + 3 U \right$ $U+5312 \operatorname{left}(H^2 k^2+3\right) H^7+31104 \operatorname{left}(H^2 k^2+3\right)$ U^3\right) k^6+9 \left(31231 \sqrt{3} g^2 U H^6+2 g U^2 \left(67003 \sqrt{3} U+34336 \sqrt{g H $\left(H^2 k^2 + 3\right) H^5 + 288 \left(162 \right) H^5 + 188 \left(162 \right) H^5 + 1$ $H^{13} \left(H^2 k^2+3\right)\right) \$ g U^3 H^3+64 \left(486 \sqrt{g H^5 \left(H^2 k^2+3\right)} U^4+1155 \sqrt{g^3 H^7 \left(H^2 k^2+3\right)} k^2+3\right)} U^2+59 \sqrt{g^5 H^9 \left(H^2 k^2+3\right)}\right)\right) k^2+243 \left(2592 \sqrt{g H $\left(H^2 k^2+3\right) U^4+g H\left(7823 \right) + 18832 \left(H^2 k^2+3\right) U^4+g H\left(1823 \right)$ $U^2+4423 \sqrt{3} g^2 H^2 U+832 \sqrt{g^5 H^5 \left(\frac{H^2 k^2+3\right)}{\sinh(H^2 k^2+3\right)}} \left(\frac{1}{3} 30720 -\frac{1}{3} \frac{1}{3} \frac{1}$ $\label{left} $$ \left(H^2 k^2+3\right)^{9/2}+\frac{k^9 \left(H^2 k^2+3\right) U+\sqrt{3} \left(H^2 k^2+3\right) U+\sqrt{3} \right) H^2(H^2 k^2+3)^2} + H^2(H^2 k^2+3)^2 H^2(H^2 k^2+3)^2$ $\left(H^2 k^2+3\right)\right)$ k^2+3\right)} U\right) k^8+3 U \left(45573 \sqrt{3} g^2 H^8+g U \left(456644 \sqrt{3} U+108089 $k^6+9 \left(153703 \right)$ $47651 \right)$ $k^2+3\right) h^5+254208 \left(H^9 \left(H^2 k^2+3\right) \right) U^4+7035 \left(H^5 H^5 H^6 H^6 \right) h^6+254208 \right)$ k^2+3\right)\right) k^4+27 \left(172047 \sqrt{3} g^2 U H^4+477940 \sqrt{3} g U^3 H^3+169472 $\label{eq:continuous} $$ \left(H^2 k^2 + 3\right) U^4 + 372075 \right] H^7 \left(H^2 k^2 + 3\right) U^2 + 18078$ $\$ \\ sqrt{g^5 H^9 \\ left(H^2 k^2+3\\ right)\\ right) \\ k^2+81 \\ left(42368 \\ sqrt{g H \\ left(H^2 k^2+3\\ right)\\ U^4+g H \left(122207 \sqrt{3} U+132513 \sqrt{g H \left(H^2 k^2+3\right)\right) U^2+63917 \sqrt{3} g^2 H^2 $U+11603 \left(\frac{41}{92160} \right) \left(\frac{4}{92160} \right) \left$ $\left(H^2 \cup k^3+3 \cup k-\sqrt{3}\right) \left(H^2 \cup k^3+3 \cup$ $\label{left(h^2 k^2+3\circ h)^2}-\frac{h^2}{k^2+3\circ h^2}-\frac{h^2}{k^2+3\circ h^2} -\frac{h^2}{k^2+3\circ h^$ $k^2+3\right) \left(\frac{4}{2} \right) \left(\frac{4$ $\label{left} $$ k^2+3\right)\right) \cdot (H^2 k^2+3\right) \cdot (H^2 k^2+3) \cdot (H^$ $H^5 \left(H^2 k^2+3\right) - H^2 U\right) k^2+9 U-9 \left(H^2 k^2+3\right) + 1 H^2 U\right)$ $\label{eq:continuity} $$U^2+3 g H \left(\frac{4^2 k^2+3\right\) U-\sqrt{3} \left(\frac{4^2 k^2+3\right)}\right)\right. $$$ $\label{left} $$ \left(\frac{d^2 k^2+3\right)^3}+\frac{k^5 \left(\frac{4^2 k^2+3\right)^3}{\sqrt{2+3}\right)^2} + \frac{k^5 \left(\frac{k^5 \left(\frac{k^5 k^2+3\right)^3}{\sqrt{2+3}\right)^3}}{\sqrt{2+3}\left(\frac{k^5 k^2+3\right)^3}} \right) $$$ \left(H^2 k^2+3\right)\\right) \left(\left(H^4 IJ k^4+\left(6 H^2 IJ-4 \sart{3} \sart{g H^5 \left(H^2

 $k^2+3\left(h^2 + h^2 + h^2 \right) \\ \left(h^2 + h^2 \right)$ $k^2+3\right) U-2 \sqrt{3} \left(H^2 k^2+3\right) U+9 g^2 H^2\right) text{dt}^4{5}$ $\label{left(H^2 k^2+3\left| h^2 \right| h^3} + O\left(\frac{t^{5}\right) + O\left(\frac{t}{3} \right) + O$ $H_{H^2 k^2+3}=2 U\right)-\frac{k^3 \left(\frac{k^3 \left(\frac{k^3 \left(\frac{k^3 \left(\frac{k^3 \left(\frac{k^3 \left(\frac{k^3 \left(\frac{k^3 k^2 + 3 \right)}{k^2 + 3 \right)}}{k^3 k^2 + 3 \right)}}\right)}{k^3 k^2 + 3 k$ k^2+3\right)\right)\left(\sqrt{3} g H-2 \sqrt{g H \left(H^2 k^2+3\right)} U\right)\right)\right)\text{dt}}{4} $\label{left} $$k^2+3\right) U\rightarrow U-2 \qquad H+U \left(\left(H^2 k^2+3\right) U-2 \right) = H+U \left(H^2 k^2+3\right) U-2 \qquad H+U \left(H^2 k^2+3\right) U-2 \right) = H+U \left(H^2 k^2+3\right) U-2$ $k^2+3\right) \right) \t (H^2 k^2+3\right) \t (H^2 k^2+3) \t (H$ $H-2 \left(H^2 \left(H^2 + 1 \right) \right) \left(H^2 + 1 \right)$ $k^2 + 3 \right) - 2 H^2 U \right) k^2 + 9 U - 9 \left(H^2 K^2 + 3 \right) - H^2 U \right) h^2 + 9 U - 9 \left(H^2 K^2 + 3 \right) h^2 H^2 U \right) h^2 U \right) h^2 U \right) h^2 U \right) h^2 H^2 U \right) h^2 H^2 U \right) h^2 U \right) h^2 U \right) h^2 \eta + 1 H^2 U \right) h^2 U \right) h^2 U \right) h^2 U \right) \eta + 1 H^2 U \right) \eta + 1 H^2 U \right) \eta + 1 H^2 U \right) \eta + 1 H^2 U \right) h^2 U \right) h^2 U \right) \eta + 1 H^2 U \right) \eta + 1 H^2 U \right) h^2 U \right) \eta + 1 H^2 U +$ $\left(\frac{H}\left(\frac{h^2 k^2+3\right)}{5/2} + \frac{k^6 \left(\frac{h^6 \left(\frac{h^2 k^2+3\right)}{1}}{1} \right)}{1} \right)$ $U + \left(\frac{H^4 U k^4 + \left(\frac{H^2 U - 4 \right)}{16H(H^2 U k^2 + 3\left(\frac{H^2 U - 4 \right)}{16H(H^2 U k^2 + 3\left(\frac{H^2 U - 4 \right)}{16H(H^2 U k^2 + 3\left(\frac{H^2 U - 4 \right)}{16H(H^2 U k^2 + 3\left(\frac{H^2 U u k^2 U - 4 \right)}} \right)} \right)$ $U-2 \sqrt{3} \sqrt{3} \sqrt{4} 4 \sqrt{2+3}\right) U+9 g^2 H^2\right) \left(\frac{4}{3} \right)$ $\left(\frac{4t}{5}\right) \cdot \left(\frac{4t}{5}\right) \cdot \left(\frac{$ $H \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 3 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2 + 3 \left(3 +^2 k^2 + 13 \right) U k^2$ $k^2+3\right) U\right) U\right) {ght}\6 \sqrt{g} H \left(\frac{H^2 k^2+3\right)^3} + \frac{k^4 \left(\frac{H}{g} H \right)^{3/2}}{h^2} \right)$ $\left(37 \text{ H}^4 \text{ k}^4+234 \text{ H}^2 \text{ k}^2+369\right) \text{ U}-144 \right) \text{ H}\left(\frac{1}{2} \text{ k}^2+3\right) \left(\frac{1}{2} \text{ H}\right) \left(\frac{1}{2} \text{ k}^2+3\right) \left(\frac{1}{2} \text{ H}\right) \left(\frac{1}{2} \text{ k}^2+3\right) \left(\frac{1}{2} \text{ H}\right) \left(\frac{1$ $\$ \\sqrt{g H^9 \left(H^2 k^2+3\right)} U^2 k^4+3 \left(14 \sqrt{g H^5 \left(H^2 k^2+3\right)} U^2+3 $\left(\frac{g^3 H^7 \left(H^2 k^2+3\right)}\right) k^2+63 \right) k^2+63$ $\label{eq:left(h^2 k^2+3\wedge fight)^{5/2}}-\frac{\left(k^5 \left(k^5 \right) + f(k^2 k^2+3\right)}{5/2}}-\frac{1}{2}$ $\label{eq:k-2+3-right} $$ k^2+3\right)-\left(H^2 k^2+3\right)+\left(H^2 k^2+3\right)-\left(H^2 k^2+3\right)+H^2 k^2+3\left(H^2 k^2+3\right)-\left(H^2 k^2+3\right)-\left(H^2 k^2+3\right)-\left(H^2 k^2+3\right)-\left(H^2 k^2+3\right)+H^2 k^2+3\left(H^2 k^2+3\right)-\left(H^2 k^2+3\right)+H^2 k^2+3\left(H^2 k^2+3\right)+H^2 k^2+3\left(H^2 k^2+3\right)-H^2 k^2+3\left(H^2 k^2+3\right)$ $\left(49 \text{ H}^4 \text{ k}^4 + 306 \text{ H}^2 \text{ k}^2 + 477\right) \text{ U}\right) + \left(49 \text{ H}^4 \text{ k}^4 + 306 \text{ H}^2 \text{ k}^2 + 477\right) + \left(49 \text{ H}^4 \text{ k}^4 + 306 \text{ H}^2 \text{ k}^2 + 477\right) + \left(49 \text{ H}^4 \text{ k}^4 + 306 \text{ H}^2 \text{ k}^2 + 477\right) + \left(49 \text{ H}^4 \text{ k}^4 + 306 \text{ H}^2 \text{ k}^2 + 477\right) + \left(49 \text{ H}^4 \text{ k}^4 + 306 \text{ H}^2 \text{ k}^2 + 477\right) + \left(49 \text{ H}^4 \text{ k}^4 + 306 \text{ H}^2 \text{ k}^2 + 477\right) + \left(49 \text{ H}^4 \text{ k}^4 + 306 \text{ H}^2 \text{ k}^2 + 37\right) + \left(49 \text{ H}^4 \text{ k}^4 + 306 \text{ H}^2 \text{ k}^2 + 37\right) + \left(49 \text{ H}^4 \text{ k}^4 + 306 \text{ H}^4 \text{ k}^4 + 306 \text{ H}^4 \text{ k}^4 + 37\right) + \left(49 \text{ H}^4 \text{ k}^4 + 306 \text{ H}^4$ $k^4+3 \left(\frac{4}{5} H^5 \left(\frac{4^2 + 3\right)} U^2+3 \right) U^2+3 \left(\frac{4^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2 + 3^2$ $\label{left} $$k^2+72 \operatorname{left}(H^2 k^2+3\right) U^2\right) \to \label{left} $$h^2+3\right) U^2\right) \to \label{left} $$h^2+3\right) $$$ $\left(H^2 k^2+3\right)^{7/2}\right)+\frac{k^6 \left(\sqrt{3} \sqrt{3} \right)}{1-2}$ $k^2+3\right) U\left(\frac{4}{5} \left(\frac{4+6\left(\frac{52 \left(\frac{4+6}{5} \right) U}{10} \right) U^2 k^4+6\left(\frac{4+6}{5} \right) U^2 k^4+6 \right) U^2 k^4+6 U^2$ $\label{left} $$\left(H^2 k^2 + 3\right) \ U^2 + 9 \right(H^2 k^2 + 3\right) \ h^2 + 68 \ y \ H \left(H^2 k^2 + 3\right) \ h^2 + 68 \ y \ h^2 + 68 \$ $k^2+3\right) U^2+g H \left(198 \right) U^2+g H \left(198 \right) -\left(198 \right) -\left(198 \right) U^2+g H \left(198 \right) U^2+g H \left($ $H^2 k^2 + 58 \right) U \right) \left(\frac{d^3}{g^2} + \frac{d^2 k^2 + 3 \right) \left(\frac{4k^2 + 3 \right) \left(\frac{k^2 + 3 \right) \left(\frac$ $\label{left(sqrt{3} \sqrt{g } H \left(H^2 \ k^2 + 3\right) - \left(H^2 \ k^2 + 3\right) U \cap (64 \sqrt{g}) } - \left(H^2 \ k^2 + 3\right) \cap (H^2 \ k^2 + 3) \cap (H^2 \ k^2 + 3\right) \cap (H^2 \ k^2 + 3) \cap ($ H^9 \left(H^2 k^2+3\right)\} U^2 k^4+3 \left(128 \sqrt{g H^5 \left(H^2 k^2+3\right)\} U^2+21 $\sqrt{g^3 H^7 \left(H^2 k^2+3\right)} \right)$ $H \left(\frac{25 \left(H^2 k^2 + \sin(H)^2 k^2 + \sin(H)^2 k^2 + \sin(H)^2 k^2 + 693\right)}{\left(H^2 k^2 + 693\right)} \right)$ $\label{eq:left} $$ \operatorname{dx}^2+\left(\frac{k^4 \left(16 \left(\frac{16 \left(\frac{4^2 k^2+3\right)}{k^2+3\right)} k^2+3\right)}{k^2+3 \left(\frac{4^2 k^2+3}{k^2+3\right)} k^2+3\right)} k^2+3 \right) $$$ $k^2+3\right) \left(U-\sqrt{3} g H \left(H^2 k^2+3\right) \right) \left(H^2 k^2+3\right) \right)$ $k^2 + 3 \right) ^{3/2} + \frac{k^5 \left(k^5 \left(k^5 \left(k^5 \left(k^7 \left$ $\left(\frac{H^2 k^2+3\right)}{16} \left(\frac{H^2 k^2+3\right)} \right)$ $\$ \sqrt{g H^5 \left(H^2 k^2+3\right)} U^2+\sqrt{g^3 H^7 \left(H^2 k^2+3\right)}\right) k^2+9 \sqrt{g H} $\label{left(H^2 k^2+3\circ h) U^2\circ h} $$\left(H^2 k^2+3\right) U^2\right)^{5/2}+\frac{dt}{128 \cdot gH} \left(H^2 k^2+3\right)^{5/2}+\frac{dt}{128 \cdot gH} \right)^{5/2}+\frac{dt}{128 \cdot gH} \left(H^2 k^2+3\right)^{5/2}+\frac{dt}{128 \cdot g$ $k^6 \left(\frac{9 \right) }{2 \cdot 13 \cdot 19}$

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 $H^2 k^2+129$ \right) $U-96 \sqrt{H^2 k^2+3}$ \right)\right) $H-32 \left(\frac{H^2 k^2+129}{H^2 k^2+129} \right)$ k^2+3\right)} U^3 k^4+2 \left(3 \sqrt{g H^5 \left(H^2 k^2+3\right)} U^3+2 \sqrt{g^3 H^7 \left(H^2 k^2+3\right)} $k^2+3\right) U\rightarrow k^2+9 \left(H^2 k^2+3\right) U^3\right) \left(L^3\right) \left(L^3\right$ $\left(H^2 k^2+3\right)\right)$ \left(103 H^4 k^4+646 H^2 k^2+1011\right) U-717 \sqrt{g H \left(H^2 k^2+3\right)\right) H-5 $\left(32 \right) H^5 \left(H^2 k^2+3\right) U^3 k^4+3 \left(4 \right) H^5 \left(H^2 k^2+3\right)$ $U^3+39 \operatorname{sqrt}\{g^3 H^7 \operatorname{left}(H^2 k^2+3\operatorname{right})\} U\operatorname{right}(k^2+288 \operatorname{sqrt}\{g H \operatorname{left}(H^2 k^2+3\operatorname{right})\})$ $\label{left} $$U^3\right)\right) \operatorname{left}(H^2 k^2+3\right)^{7/2}\right)-\frac{1}{2}.$ $k^8 \left(\frac{1}{sqrt} \right) -\left(\frac{k^2 + 3 \right) - \left(\frac{$ g^2 \left(11 H^2 k^2+45\right) H^2+g U \left(\sqrt{3} \left(149 H^4 k^4+930 H^2 k^2+1449\right) $U-990 \left(\frac{40 \operatorname{ft}(H^2 k^2+3\right)}{U-990} \right) - 2 \left(\frac{40 \operatorname{ft}(40 \operatorname{ft}(H^2 k^2+3\right)}{U-990} \right) - 2 \left(\frac{40 \operatorname{ft}(H^2 k^$ $k^4 + \left(240 \right) + f(H^2 k^2 + 3\right) U^3 + 137 \left(40 \right) H^7 \left(H^2 k^2 + 3\right) U^3 + 137 \left(40 \right) H^7 \left(H^2 k^2 + 3\right) U^3 + 137 \left(40 \right) U^3 + 13$ $U \rightarrow k^2+360 \rightarrow k^2+360 \rightarrow k^2+3k^2 + 3k^2 +$ $\label{left(xext{dt}^5\rightarrow k^2+3\right)^{9/2}} + O\left(\frac{t}{5}\right) \cdot \left(\frac{dt}{5}\right) \cdot \left(\frac{dx}{3} + \left(\frac{k^5}{16}\right)\right) \cdot \left(\frac{dx}{3}\right) \cdot \left(\frac{dx$ $H^9 \left(H^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 + 3 \right) k^2 + 9 \left(H^2 k^2 + 3 \right) k^2 + 9 \left(H^2 k^2 + 3 \right) k^2 + 9 \left(H^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 + 6 \left(H^2 k^2 k^2 + 3 \right) k^4 +$ $k^2+3\right) \ U-3 \ gH \left(15 H^4 k^4+146 H^2 k^2+543\right) \ U-3 \ sqrt{3} gH \left(15 H^4 k^4+146 H^2 k^2+543\right) \ (30720 \ sqrt{gH})$ \left(H^2 k^2+3\right)^{5/2}}+\frac{i k^6 \left(128 \left(31 \sqrt{g H^{13} \left(H^2 k^2+3\right)} U^2 $k^6 + 279 \left(H^9 \left(H^2 k^2 + 3 \right) \right) U^2 k^4 + 27 \left(31 \right) \left(H^5 \left(H^2 k^2 + 3 \right) \right)$ $U^2+7 \cdot g^3 H^7 \cdot (H^2 k^2+3\right) \cdot h^7 \cdot h$ U^2\right)-3 g H \left(1381 \sqrt{3} H^6 U k^6+\left(13717 \sqrt{3} H^4 U-960 \sqrt{g H^9 \left(H^2 k^2+3\right)\right) k^4+45735 \sqrt{3} H^2 U k^2+51039 \sqrt{3} U-18432 \sqrt{g H \left(H^2 $k^2+3\right) \right) \left(H^2 k^2+3\right) \left(H^2$ \sqrt{3} g^2 \left(775 H^4 k^4+6258 H^2 k^2+12999\right) H^2+g U \left(20551 \sqrt{3} H^6 U k^6-3 \left(12288 \sqrt{g H^9 \left(H^2 k^2+3\right)}-65021 \sqrt{3} H^4 U\right) k^4+617661 \sqrt{3} H^2 $\label{left} $$U $^2+81 \left(8053 \right) -5888 \left(H^2 K^2+3\right)\right) + 128 \left(H^2 K^2+3\right) + 128 \left($ $\$ \\sqrt{g H^{13} \\left(H^2 k^2+3\right)} U^3 k^6+774 \\sqrt{g H^9 \\left(H^2 k^2+3\right)} U^3 k^4+9 $k^2+3 \right)^{7/2}-\frac{i k^8 \left(U^3 \left(U^3 \left(H^2 + H^1\right)\right)}{177} \left(H^2 k^2+3 \right) U-21253 \right)$ \sqrt{3} g H^9\right) k^8-3 U \left(9181 \sqrt{3} g^2 H^8+4 g U \left(21787 \sqrt{3} U-5312 \sqrt{g} $H \left(\frac{H^2 k^2+3\right)}{h^2 + 3 \cdot (H^2 k^2+3 \cdot$ \left(-31231 \sqrt{3} g^2 U H^6+2 g U^2 \left(34336 \sqrt{g H \left(H^2 k^2+3\right)}-67003 \sqrt{3} $U + 5 + 288 \left(162 \right) + 0^2 \left(162 \right) + 0^2 \left(164 \right) + 0^2$ $k^2+3\right) \left(\frac{3}{g} U^3 H^3+64 \right)$ \left(486 \sqrt{g H^5 \left(H^2 k^2+3\right)} U^4+1155 \sqrt{g^3 H^7 \left(H^2 k^2+3\right)} U^2+59 $\label{eq:continuity} $$ \frac{g^5 H^9 \left(H^2 k^2+3\right)\right)\right) \left(k^2+243 \left(2592 \right) \left(H^2 k^2+3\right)} \left(h^2 k^2+3\right) \left(h^2 k^2+$ $H^2 U + 832 \left(\frac{6^5 H^5 \left(H^2 k^2 + 3\right)}{10^3 H^2 U + 832 \left(H^2 k^2 + 3\right)} \right) \left(\frac{4}{3} \right) \left($ $k^2+3\right)^{9/2}-\frac{h^2 k^2+3\left(h^2 k^2+3\right)^{-2}}{\ln(k^9 \left(h^2 k^2+3\right)^{-2})^{-2}} - \frac{h^2 k^2+3\left(h^2 k^2+3\right)^{-2}}{\ln(h^2 k^2+3\right)^{-2}} - \frac{h^2 k^2+3\left(h^2 k^2+3\right)^{-2}}{\ln(h^2 k^2+3)^{-2}} - \frac{h^2 k^2+3\left(h^2 k^2+3\right)^{-2}}{\ln(h^2$ $U + \frac{11559 + 1}{1} \left(U^3 \left(U^3 \right) + \frac{11559 + 1}{1} \left(U^3 \right) \left(U^3 \right) \left(U^3 \right) \left(U^3 \right) \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \left(U^3 \right) \left(U^3 \right) \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \left(U^3 \right) \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \left(U^3 \right) \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \left(U^3 \right) \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U + \frac{11559 + 1}{1} \left(U^3 \right) \\ U$ $k^8-3 U \left(45573 \right) q^2 H^8+g U \left(456644 \right) U-108089 \left(45646 \right) U-108089$ k^2+3\right)\right) H^7-169472 \sqrt{g H^{13} \left(H^2 k^2+3\right)} U^3\right) k^6+9 \left(-153703) \sqrt{3} g^2 U H^6+g U^2 \left(347651 \sqrt{g H \left(H^2 k^2+3\right)}-700818 \sqrt{3} U\right) $H^5 + 254208 \left(H^9 \left(H^2 k^2 + 3\right) \right) U^4 + 7035 \left(g^5 H^{13} \left(H^2 k^2 + 3\right) \right) H^5 + 254208 \right) H^6 + 264208 \left(H^2 k^2 + 3\right) H^6 + 264208 \right) H^6 + 264208 \left(H^2 k^2 + 3\right) H^6 + 264208 \left(H^2 k^2 + 3\right) H^6 + 264208 \right) H^6 + 264208 \left(H^2 k^2 + 3\right) H^6 + 264208 \left(H^4 k$ $k^4+27 \left(-172047 \right) g^2 U H^4-477940 \right) g U^3 H^3+169472 \right]$ $k^2+3\right) U^4+372075 \sqrt{g^3 H^7 \left(H^2 k^2+3\right)} U^2+18078 \sqrt{g^5 H^9 \left(H^4 k^2+3\right)} U^2+1$ k^2+3\right)\right) k^2+81 \left(42368 \sqrt{g H \left(H^2 k^2+3\right)} U^4+g H \left(132513 $\left(\frac{g^5 H^5 \left(H^2 k^2+3\right)}\right)\right)\right) \$

Out[197]=

$$\begin{aligned} & \text{Out} \text{[198]=} \quad \text{EA II} \quad \left\{ \left\{ 1 \, + \, \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, \text{H}^2 \, \text{k}^3 \, \text{U} \, \text{Csc} \left[\frac{\text{dx} \, k}{2} \right]}{6 + 2 \, \text{H}^2 \, \text{k}^2 \, \text{W}}, \, \, \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, \text{H} \, k \, \text{Csc} \left[\frac{\text{dx} \, k}{2} \right]}{2 \left(\text{H} + \frac{\text{H}^3 \, k^2}{3} \right) \, \text{W}} \right\}, \\ & \left\{ \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, k \, \left(g \, \text{H} \, \left(3 + \text{H}^2 \, \, k^2 \right) - 3 \, \text{U}^2 \right) \, \text{Csc} \left[\frac{\text{dx} \, k}{2} \right]}{2} \right\}, \, \\ & \left\{ \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, k \, \left(g \, \text{H} \, \left(3 + \text{H}^2 \, \, k^2 \right) - 3 \, \text{U}^2 \right) \, \text{Csc} \left[\frac{\text{dx} \, k}{2} \right]}{2} \right\}, \, \\ & \left\{ \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, k \, \left(g \, \text{H} \, \left(3 + \text{H}^2 \, \, k^2 \right) - 3 \, \text{U}^2 \right) \, \text{Csc} \left[\frac{\text{dx} \, k}{2} \right]}{2} \right\}, \, \\ & \left\{ \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, k \, \left(g \, \text{H} \, \left(3 + \text{H}^2 \, \, k^2 \right) - 3 \, \text{U}^2 \right) \, \text{Csc} \left[\frac{\text{dx} \, k}{2} \right]}{2} \right\}, \, \\ & \left\{ \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, k \, \left(g \, \text{H} \, \left(3 + \text{H}^2 \, \, k^2 \right) - 3 \, \text{U}^2 \right) \, \text{Csc} \left[\frac{\text{dx} \, k}{2} \right]}{2} \right\}, \, \\ & \left\{ \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, k \, \left(g \, \text{H} \, \left(3 + \text{H}^2 \, \, k^2 \right) - 3 \, \text{U}^2 \right) \, \text{Csc} \left[\frac{\text{dx} \, k}{2} \right]}{2} \right\}, \, \\ & \left\{ \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, k \, \left(g \, \text{H} \, \left(3 + \text{H}^2 \, \, k^2 \right) - 3 \, \text{U}^2 \right) \, \text{Csc} \left[\frac{\text{dx} \, k}{2} \right]}{2} \right\}, \, \\ & \left\{ \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, k \, \left(g \, \text{H} \, \left(3 + \text{H}^2 \, \, k^2 \right) - 3 \, \text{U}^2 \right) \, \text{Csc} \left[\frac{\text{dx} \, k}{2} \right] \, \right\} \, \right\} \, \\ & \left\{ \frac{i \, e^{\frac{i \, \, \text{dx} \, k}} \left(1 - e^{-i \, \, \text{dx}$$

Out[199]= EA || \left(

\begin{array}{cc}

 $\frac{i e^{\frac{i -e^{-i \text{d}x} k}{2}} \left(1-e^{-i \text{d}x} k\right) \left(1-e^{i -i \text{d}x} k\right) \left(1-e^{i \cdot e^{-i \cdot e}}\right) \left(1-e^{-i \cdot e}\right) \left$ $w \rightarrow H^2 U \csc \left(\frac{k}{2} \right) k^3 {\left(H^2 K^2 + 6 \right) w} + 1$ & $\frac{i e^{\frac{i -e^{i \cdot k}}{dx} k}}{2}} \left(1-e^{-i \cdot k} \right) \left(1-e^{-i \cdot k}\right) \left(1-e^{-i \cdot k}\right)$ $w\} right) H k \csc \left(\frac{dx}{k}^2 \right)^{2 \left(\frac{k^2 H^3}{3} + H \right) w}$ $\frac{i e^{\frac{1}{2}} \left(1-e^{-i \cdot text\{dx\} k}\right)}{1-e^{-i \cdot text\{dx\} k}\right)} \left(1-e^{-i \cdot text\{dx\} k}\right) \left(1-e^{-i \cdot text\{dx\} k}\right)} \left(1-e^{-i \cdot text\{dx\} k}\right) \left(1-e^{-i \cdot text\{dx\} k}\right)$ $\left(H^2 k^2+3\right) -3 U^2\right) \c \left(H^2 k^2+3\right) \c \left(H^2 k^2+6\right) \c \left(H^2 k^2+3\right) \c \left(H^2 k^2+6\right) \c \left(H^2 k^2+3\right) \c \left(H^2 k^2+3\right$ $w\} \& \frac{i e^{\frac{i \cdot k}{2}} \left(1 - e^{-i \cdot k} k\right) \left($ $k \left(\frac{h^2 k^2+6\right)}{\left(\frac{h^$ \end{array}

\right)

$$\begin{aligned} & \text{Cout200} | & \text{Eerr } | & \left\{ \left\{ \frac{i \left\{ \sqrt{3} \ k \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, \text{k}^2)} + 3 \, k \, \text{U} \right\} \, dt}{3 + \text{H}^2 \, k^2} - \frac{1}{2} \left\{ -\frac{i \, \sqrt{3} \ k \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, k^2)}}{3 + \text{H}^2 \, k^2} - i \, k \, \text{U} \right\}^2 \, dt^2 - \\ & \frac{1}{6} \left(-\frac{i \, \sqrt{3} \ k \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, k^2)}}{3 + \text{H}^2 \, k^2} - i \, k \, \text{U} \right)^3 \, dt^3 - \frac{1}{24} \left(-\frac{i \, \sqrt{3} \ k \sqrt{g \, \text{H} \, (3 + \text{H}^2 \, k^2)}}{3 + \text{H}^2 \, k^2} - i \, k \, \text{U} \right)^4 \, dt^4 + O[\, dt]^5 \right) + \\ & \left(-\frac{1}{2} \left(k^2 \, \text{U} \right) \, dt + O[\, dt]^5 \right) \, dx + \left(\frac{i \, (9 \, \text{H}^2 \, k^2 + 2 \, \text{H}^2 \, k^2) \, \text{U} \, dt}{12 \, (3 + \text{H}^2 \, k^2)^2} + O[\, dt]^5 \right) \, dx^2 + \left(\frac{1}{24} \, k^4 \, \text{U} \, dt + O[\, dt]^5 \right) \, dx^3 + \\ & \left(-\frac{i \, (54 \, \text{H}^2 \, k^2 + 19 \, \text{H}^2 \, k^2 + 2 \, \text{H}^2 \, k^1) \, \text{U} \, dt}{4 \, (3 + \text{H}^2 \, k^2)^2} + O[\, dt]^5 \right) \, dx^4 + O[\, dx]^5 \right\}, \\ & \left\{ \left(-\frac{i \, (54 \, \text{H}^2 \, k^2 + 19 \, \text{H}^2 \, k^2 + 2 \, \text{H}^2 \, k^2) \, dt}{4 \, (3 + \text{H}^2 \, k^2)^2} + O[\, dt]^5 \right) \, dx^2 + \left(\frac{i \, (-54 \, k^2 + \text{H}^4 \, k^2) \, dt}{240 \, (3 + \text{H}^2 \, k^2)^2} + O[\, dt]^5 \right) \, dx^4 + O[\, dx]^5 \right\}, \\ & \left\{ \left(\left(-\frac{i \, g \, \text{H} \, k} + \frac{i \, \text{H}^2 \, U^2}{4 \, H^2 \, k^2 + 2 \, g \, \text{H}^2 \, k^2 + 2 \,$$

```
\begin{array}{cc}
                                                                              \label{left(hrac(i)} $$\left(\frac{U k+\sqrt{1}}{gt} \frac{H \left(\frac{h^2 k^2+3\right)}{k\right)} k\right) \text{ } k^2 + 3 + \frac{1}{2} \left(\frac{U k^2 k^2+3}{gt} \right) \text{ } k^2 + 3 + \frac{1}{2} \left(\frac{U k}{gt} \right) \text{ } k^2 + 3 + \frac{1}{2} \left(\frac{U k}{gt} \right) \text{ } k^2 + 3 + \frac{1}{2} \left(\frac{U k}{gt} \right) \text{ } k^2 + \frac{1}{2} \left(\frac{U
                                                                                                                                         k-\frac{i \operatorname{sqrt}{3} \operatorname{H}\left(H^2 k^2+3\right)}{k}{H^2 k^2+3}\right)^2 \operatorname{text}{dt}^2-\frac{1}{6}}
                                                                                                                                         \t \{dt\}^3-\frac{1}{24} \left(i \ U \ k-\frac{3} \right) \ \left(i \ \ H \ \left(i \ H^2 \ k^2+3\right) \ k}{H^2}
                                                                                                                                         \label{left} $$k^2+3\right\right)^4 \left(\frac{dt}^4+O\left(\frac{dt}^5\right)\right)^5\right)^+\left(-\frac{1}{2}\left(\frac{1}{2}\right)^2\right)^2
                                                                                                                                         \text{dt}+O\left(\text{dt}}^5\right)\right)\text{dx}+\left(\frac{i \left(2 H^4 k^7+9 H^2 k^5\right) U
                                                                                                                                         \label{eq:linear_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_con
                                                                                                                                         \text{dx}^4+O\left(\frac{dx}^5\right) & \left(-\frac{3 i k \text{d}}{H^2}\right)
                                                                                                                                         \label{left(H^2 k^5+6 k^3\left(t\right)} $$ \end{tikz} $$ \end{ti
                                                                                                                                         k^2+3\right)^2+O\left(\frac{dx}^5\right)\right)
                                                                                                                                         \label{left(frac{i } H k U^2}{\frac{k^2 H^3}{3}+H}-i g H k right)} \\
                                                                                                                                         \text{text}\{dt\}+O\left(\text{text}\{dt\}^5\right)+\left(-\frac{1}{2}\left(H k^2\right)\right)
                                                                                                                                         \text{dt}+O\left(\frac{dt}{5\right)}\right) \cdot \left(\frac{dt}{5\right)} \cdot \left(\frac{dt}{5}\right) \cdot \left(\frac{dt}{5}
                                                                                                                                          k^5 - 18 \ U^2 \ k^3 + 18 \ g \ H \ k^3 \ | \ \text{text} \ dt \} \\  \{12 \ \text{left} \ (H^2 \ k^2 + 3 \ \text{right})^2 \} + O(\text{left} \ (\text{text} \ dt \}^5 \ \text{right}) \ \text{right}) 
                                                                                                                                         \label{eq:lambda} $$ \operatorname{dt}^2-\left(\frac{1}{24} g \ H \ k^4 \ text{dt}+O\left(\frac{dt}{0}\right)^5\right) \right) \ text{dx}^3+\left(\frac{dt}{0}\right)^3. $$
                                                                                                                                         \left(2 g H^7 k^{11}+18 g H^5 k^9+H^4 U^2 k^9+54 g H^3 k^7-54 U^2 k^5+54 g H k^5\right)
                                                                                                                                         \label{left} $$ \operatorname{dt}_{240 \left(H^2 k^2+3\right)^3}+O\left(\frac{dt}^5\right)\right) \operatorname{dt}_{14}. $$ \operatorname{dt}_{240 \left(H^2 k^2+3\right)^3}+O\left(\frac{dt}^5\right)\right) \operatorname{dt}_{14}. $$
                                                                                                                                         & \left(\frac{1}{frac} \right)\right) \right) \right) \right)}{1}\right)}\right)}\right)}\right)}\right)} \right)} \right)} \right)} drac + \sum_{i=1}^{n} \frac{1}{frac} \frac{1}{fr
                                                                                                                                         k^2+3-\frac{1}{2} \left(-i U k-\frac{i \sqrt{3} \sqrt{g H \left(H^2 k^2+3\right)} k}{H^2}
                                                                                                                                          k^2+3\right\right)^2 \left( h^2 - \frac{1}{6} \left( i U k - \frac{3}{3} \right) \right)^2 \left( h^2 - \frac{1}{6} \left( i U k - \frac{3}{3} \right) \right)^2 \left( h^2 h^2 - \frac{1}{6} \left( i U k - \frac{3}{3} \right) \right)^2 \left( h^2 h^2 - \frac{1}{6} \left( i U k - \frac{3}{3} \right) \right)^2 \left( h^2 h^2 - \frac{3}{3} \right)^2 \left( h^2 - \frac{3}{
                                                                                                                                         k}{H^2 \ k^2+3}\right)^3 \ \text{text}{dt}^3-\frac{1}{24} \left(-i \ U \ k-\frac{i \ \sqrt{3} \ \sqrt{4} \ H^2}{24} \right)^3 -\frac{1}{24} \left(-i \ U \ k-\frac{1}{24} \right)^3 -\frac{1}{24} \left(-i \ U \ k-\frac{1}{
                                                                                                                                          k^2+3\right) k^{H^2 k^2+3}\right) + k^{2+3}\right) + k^{2+3}\left( k^{2+3}\left( k^{2+3}\right) + k^{2+3}\left( k^{2+3}\right) + k^{2+3}\left( k
                                                                                                                                         \left(\frac{x^2 U}{ght} \cdot \frac{dt}{-5\right)\right) \cdot \left(\frac{dt}{-5\right)} \cdot \left(\frac{dx}{+15}\right) \cdot \left(\frac{dx
                                                                                                                                         H^2 k^5 + 36 k^3 \right) U \left( H^2 k^2 + 3 \right) + O\left( \frac{dt}{3} \right) U \left( \frac{dt}{3} \right) 
                                                                                                                                         \label{eq:local_text} $$ \operatorname{dx}^2+\left(\frac{1}{24} k^4 U \right)-\operatorname{dt}+O\left(\frac{dt}{5}\right)\right)\right) \cdot \left(\frac{dt}{5}\right) \cdot 
                                                                                                                                         \left(2 H^6 k^{11}+17 H^4 k^9+54 H^2 k^7+108 k^5\right) U \text{dt}}{240 \left(H^2
                                                                                                                                         k^2+3\right) + O\left(text{dt}^5\right) \cdot text{dx}^4+O\left(text{dx}^5\right) \cdot text{dx}^6
                                                                        \end{array}
                                                                        \right)
\ln[202] = \text{KurF} = (\text{fm} * \text{ap} - \text{fp} * \text{am} + \text{am} * \text{ap} * (\text{qp} - \text{qm})) / (\text{ap} - \text{am});
                                                                        KurFWS = KurF /. ap \rightarrow 0 /. am \rightarrow (U - Sqrt[q * H]);
                                                                        KurFWSeta =
                                                                                                           \text{KurFWS } /. \text{ fp } \rightarrow \text{ (H*v+U*Rpp*n) } /. \text{ fm } \rightarrow \text{ (H*v+U*Rmp*n) } /. \text{ qp} \rightarrow \text{Rpp*n } /. 
                                                                                                                             qm \rightarrow Rmp * n;
                                                                        KurFWSeta = KurFWSeta / . v \rightarrow (GGp * G + Gnp * n);
                                                                        Kfnnp = FullSimplify[KurFWSeta /. G \rightarrow 0 /. n \rightarrow 1];
                                                                        KfnGp = FullSimplify[KurFWSeta /. n \rightarrow 0 /. G \rightarrow 1];
```

Out[201]= Eerr || \left(

```
Kfnn = Kfnnp / . Rpp \rightarrow Rp / . Rmp \rightarrow Rm / . GGp \rightarrow GG2 / . Gnp \rightarrow Gn2;
KfnG = KfnGp / Rpp \rightarrow Rp / Rmp \rightarrow Rm / GGp \rightarrow GG2 / Gnp \rightarrow Gn2;
Fnn2 = -dt * (1 - Exp[-I * k * dx]) / dx * Kfnn;
Fnn2TA = Series[Fnn2 - FnnA, {dx, 0, 3}, {dt, 0, 3}];
Fnn2TAr = Refine[Fnn2TA, \{k > 0, U > 0, H > 0, g > 0\}];
FnG2 = -dt * (1 - Exp[-I * k * dx]) / dx * KfnG;
FnG2TA = Series[FnG2 - FnGA, {dx, 0, 3}, {dt, 0, 3}];
FnG2TAr = Refine[FnG2TA , \{k > 0, U > 0, H > 0, g > 0\}];
KurFWSG = KurFWS /. fp \rightarrow (U*Rpp*G + U*H*v + g*H*Rpp*n) /.
      \texttt{fm} \rightarrow (\texttt{U} * \texttt{Rmp} * \texttt{G} + \texttt{U} * \texttt{H} * \texttt{v} + \texttt{g} * \texttt{H} * \texttt{Rmp} * \texttt{n}) \ /. \ qp \rightarrow \texttt{Rpp} * \texttt{G} \ /. \ qm \rightarrow \texttt{Rmp} * \texttt{G};
KurFWSG = KurFWSG / . v \rightarrow (GGp * G + Gnp * n);
KfGnp = FullSimplify[KurFWSG /. G \rightarrow 0 /. n \rightarrow 1];
KfGn = KfGnp / . Rpp \rightarrow Rp / . Rmp \rightarrow Rm / . GGp \rightarrow GG2 / . Gnp \rightarrow Gn2;
KfGG = KfGGp /. Rpp → Rp /. Rmp → Rm /. GGp → GG2 /. Gnp → Gn2;
FGn2 = -dt * (1 - Exp[-I * k * dx]) / dx * KfGn;
FGn2TA = Series[FGn2 - FGnA, {dx, 0, 3}, {dt, 0, 3}];
FGn2TAr = Refine[FGn2TA, \{k > 0, U > 0, H > 0, g > 0\}];
fGG2 = U * H * GG2 + U / 2 * (Rm + Rp) - (Sqrt[g*H]) / (2) * (Rp - Rm);
FGG2 = -dt * (1 - Exp[-I * k * dx]) / dx * KfGG;
FGG2TA = Series[FGG2 - FGGA, {dx, 0, 4}, {dt, 0, 3}];
FGG2TAr = Refine[FGG2TA, \{k > 0, U > 0, H > 0, g > 0\}];
Fmat2 = {{Fnn2, FnG2}, {FGn2, FGG2}};
Emat2 = IdentityMatrix[2] + Fmat2;
Eerr = Series[Emat2 - Exp[-I * wAp * dt] * IdentityMatrix[2], {dx, 0, 4}, {dt, 0, 4}];
EigvFmat2 = Eigenvalues[Fmat2];
RKStep = Log[1 + EigvFmat2] / (I * dt);
RKstepTay = Series[RKStep, {dx, 0, 4}, {dt, 0, 4}];
RKstepTayr = Simplify[-RKstepTay - \{wAp, wAm\}, \{k > 0, H > 0, g > 0, U > 0\}];
Text[Row[{" U < -Sqrt(gH)"}]]</pre>
Text[" "]
Text[Row[{"Fnn || ", Kfnnp}]]
Text[Row[{"Fnn || ", TeXForm[Kfnnp]}]]
Text[Row[{"Fnn error || ", Fnn2TAr}]]
Text[Row[{"Fnn error || ", TeXForm[Fnn2TAr]}]]
Text[" "]
Text[Row[{"FnG || ", KfnGp}]]
Text[Row[{"FnG || ", TeXForm[KfnGp]}]]
```

```
Text[Row[{"FnG error || ", FnG2TAr}]]
                                                                        Text[Row[{"FnG error ||
                                                                                                                                                                                                                                                                                                                                                                                                                          ", TeXForm[FnG2TAr]}]]
                                                                      Text[" "]
                                                                        Text[Row[{"FGn ||
                                                                                                                                                                                                                                                                                                                                              ", KfGnp}]]
                                                                                                                                                                                                                                                                                                                                            ", TeXForm[KfGnp]}]]
                                                                        Text[Row[{"FGn ||
                                                                        Text[Row[{"FGn error ||
                                                                                                                                                                                                                                                                                                                                                                                                                           ", FGn2TAr}]]
                                                                                                                                                                                                                                                                                                                                                                                                                          ", TeXForm[FGn2TAr]}]]
                                                                        Text[Row[{"FGn error ||
                                                                        Text[" "]
                                                                      Text[Row[{"FGG ||
                                                                                                                                                                                                                                                                                                                                           ", KfGGp}]]
                                                                        Text[Row[{"FGG ||
                                                                                                                                                                                                                                                                                                                                              ", TeXForm[KfGGp]}]]
                                                                        Text[Row[{"FGG error ||
                                                                                                                                                                                                                                                                                                                                                                                                                           ", FGG2TAr}]]
                                                                        Text[Row[{"FGG error ||
                                                                                                                                                                                                                                                                                                                                                                                                                           ", TeXForm[FGG2TAr]}]]
                                                                        Text[" "]
                                                                        Text[" "]
                                                                      Text[Row[{"Omega error ||
                                                                                                                                                                                                                                                                                                                                                                                                                                                 ", RKstepTayr}]]
                                                                        Text[Row[{"Omega error
                                                                                                                                                                                                                                                                                                                                                                                                                                                 ", TeXForm[RKstepTayr]}]]
                                                                        Text[" "]
                                                                      Text[Row[{"EA ||
                                                                                                                                                                                                                                                                                                                      ", EA}]]
                                                                        Text[Row[{"EA ||
                                                                                                                                                                                                                                                                                                              ", TeXForm[EA] } ] ]
                                                                        Text[Row[{"Eerr || ", Eerr}]]
                                                                      Text[Row[{"Eerr || ", TeXForm[Eerr]}]]
 Out[236]= U < -Sqrt(gH)
 Out[237]=
 Out[238]= Fnn \parallel Gnp H + Rpp U
 Out[239]= Fnn || \text{text}\{Gnp\}\ H+\text{text}\{Rpp\}\ U
 \begin{array}{ll} \text{Out} \text{[240]=} & Fnn \; error \; || \; \left( -\frac{\left( H^2 \; k^3 \; U \; w \right) \; dt^2}{2 \left( 3 + H^2 \; k^2 \right)} - \frac{i \; H^2 \; k^3 \; U \; w^2 \; dt^3}{6 \left( 3 + H^2 \; k^2 \right)} + O[dt]^4 \right) + \left( \frac{1}{2} \; k^2 \; U \; dt + O[dt]^4 \right) dx \; + \\ & \left( \frac{i \left( 9 \; H^2 \; k^5 + 2 \; H^4 \; k^7 \right) \; U \; dt}{12 \left( 3 + H^2 \; k^2 \right)^2} + O[dt]^4 \right) dx^2 \; + \left( -\frac{1}{24} \left( k^4 \; U \right) \; dt + O[dt]^4 \right) dx^3 \; + O[dx]^4 \\ \end{array} 
 Out[241]= Fnn error |
                                                                                       \label{left(-frac{text{dt}}^2 \left( h^2 k^3 U w \right)} {2 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3 \right) - \frac{dt}^3 H^2 k^3 U w^2} {6 \left( h^2 k^2 + 3
                                                                                                                          \left(H^2 k^2+3\right)+O\left(\left(text\{dt\}^4\right)\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text\{dx\}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qual}\right)+\left(text{qua
                                                                                                                          \text{dt}+O\left(\frac{dt}^4\right)\right)+\left(\frac{dx}^2\right)-\left(\frac{dx}^4\right)-\frac{dx}^2
                                                                                                                           k^5 + U \left( \frac{dt}{dt} \right) + \left
                                                                                                                          \left(-\frac{1}{24}\left(k^4 U\right)\right) + \left(k^4 U\right) + \left(k
 Out[242]=
 Out[243]= FnG \parallel GGp H
 \hbox{Out[244]= }FnG \hbox{ || } \text{$\setminus$text{GGp}$ $H$}
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$$\text{Out} \text{[245]= } FnG \ error \ || \ \left(-\frac{3 \ (k \ w) \ dt^2}{2 \left(3 + H^2 \ k^2 \right)} - \frac{i \ k \ w^2 \ dt^3}{2 \left(3 + H^2 \ k^2 \right)} + O[dt]^4 \right) + \left(\frac{i \left(6 \ k^3 + H^2 \ k^5 \right) dt}{4 \left(3 + H^2 \ k^2 \right)^2} + O[dt]^4 \right) dx^2 + O[dx]^4$$

 $Out[246] FnG\ error\ ||\ \left\{\frac{3 \left(\frac{4t}^2 \left(k\right)}{2} \left(k\right)\right\}}{\left(\frac{4t}^2 \left(k\right)^2 \left(k\right)}{\left(\frac{4t}{2}\right)^2 \left(k\right)}} - \left(\frac{4t}{2}\right)\right\} - \left(\frac{4t}{2}\right) - \left(\frac{4t}{2}\right$ $\label{eq:continuity} $$ k^2+3\right)+O\left(\frac{t}{4}\right)+\left(\frac{dx}^2\right)=0. $$ k^2+3\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4}\right)+O\left(\frac{t}{4$ $\label{left} $$ \left(\frac{dt}{4 \left(\frac{h^2 k^2+3\right)}}-2\right)-\left(\frac{dt}{4 \left(\frac{h^2 k^2+3\right)}}-2\right)-2\right)$$

Out[247]=

Out[248]= $FGn \parallel H(gRpp + Gnp U)$

Out[249]= $FGn \parallel H(g \text{text}{Rpp}+\text{text}{Gnp} \ U)$

$$\begin{array}{l} \text{Out} \ [250] = \ FGn \ error \ || \ \left(-\frac{\left(k \left(3 \ g \ H + g \ H^3 \ k^2 - 3 \ U^2 \right) w \right) dt^2}{2 \left(3 + H^2 \ k^2 \right)} - \frac{i \ k \left(3 \ g \ H + g \ H^3 \ k^2 - 3 \ U^2 \right) w^2 \ dt^3}{6 \left(3 + H^2 \ k^2 \right)} + O[dt]^4 \right) + \left(\frac{1}{2} \ g \ H \ k^2 \ dt + O[dt]^4 \right) dx + \\ \left(\frac{i \left(18 \ g \ H \ k^3 + 12 \ g \ H^3 \ k^5 + 2 \ g \ H^5 \ k^7 - 18 \ k^3 \ U^2 - 3 \ H^2 \ k^5 \ U^2 \right) dt}{12 \left(3 + H^2 \ k^2 \right)^2} + O[dt]^4 \right) dx^2 + \left(-\frac{1}{24} \left(g \ H \ k^4 \right) dt + O[dt]^4 \right) dx^3 + O[dx]^4 \end{aligned}$$

Out[251]= FGn error |

 $\text{text}\{dt\}^3 \text{ k w}^2 \left\{ \text{H}^3 \text{ k}^2 + 3 \text{ g H} - 3 \text{ U}^2\right\} \left\{ \text{h}^6 \left\{ \text{H}^2 \right\} \right\}$ $k^2+3\right)+O\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\frac{dt}{dt}$ $\text{dt}+O\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{dt}^4\right)+\left(\frac{d$ g H^3 k^5-3 H^2 U^2 k^5-18 U^2 k^3+18 g H k^3\right) \text{dt}}{12 \left(H^2 $k^2+3\right)^2+O\left(\frac{dt}^4\right)+\frac{dt}^3\left(-\frac{1}{24}\right)$ $\left(H k^4\right) \left(k^4\right) \left(k^4\right) \left(k^4\right) \right) + O\left(k^4\right) + O\left(k^4\right)$

Out[252]=

Out[253]= $FGG \parallel (GGp H + Rpp) U$

Out[254]= $FGG \parallel U (\text{text}\{GGp\} H+\text{text}\{Rpp\})$

$$\left(-\frac{\left(k\left(6+H^{2}\,k^{2}\right)U\,w\right)\,dt^{2}}{2\left(3+H^{2}\,k^{2}\right)}-\frac{i\,k\left(6+H^{2}\,k^{2}\right)U\,w^{2}\,dt^{3}}{6\left(3+H^{2}\,k^{2}\right)}+O[dt]^{4}\right)+\left(\frac{1}{2}\,k^{2}\,U\,dt+O[dt]^{4}\right)dx+\left(\frac{i\left(36\,k^{3}+15\,H^{2}\,k^{5}+2\,H^{4}\,k^{7}\right)U\,dt}{12\left(3+H^{2}\,k^{2}\right)^{2}}+O[dt]^{4}\right)dx^{2}+\\ \left(-\frac{1}{24}\left(k^{4}\,U\right)dt+O[dt]^{4}\right)dx^{3}+\left(-\frac{i\left(108\,k^{5}+54\,H^{2}\,k^{7}+17\,H^{4}\,k^{9}+2\,H^{6}\,k^{11}\right)U\,dt}{240\left(3+H^{2}\,k^{2}\right)^{3}}+O[dt]^{4}\right)dx^{4}+O[dx]^{5}$$

Out[256]= FGG error |

 $\left(-\frac{t}{2 \ker\{dt\}^2 \left(H^2 k^2+6\right)}}{2 \ker\{dt\}^2 \left(H^2 k^2+6\right)}}{2 \ker\{dt\}^3 k U w^2}\right)$ $\left(H^2 k^2+6\right) + \left(H^2 k^2+3\right) + O\left(H^2 k^2+3\right) + O\left(H^2 k^2+3\right) + O\left(H^2 k^2+6\right) + O\left(H^2$ $k^2 U \text{text}dt\} + O\left(\frac{t}{4}\right) + \left(\frac{t}{4}\right)^4\left(\frac{t}{4}\right) + \left(\frac{t}{4}\right)^2 \left(\frac{t}{4}\right)^2 \left(\frac{t}{4}\right)^2 + O\left(\frac{t}{4}\right)^2 + O$ $k^3 \in U \left(\frac{dt}{dt} \right)$ \text{dt}{12 \left(H^2 k^2+3 \right)^2}+O \left(\text{dt}^4 \right) \right) + \text{dx}^3 $\left(-\frac{1}{24}\left(k^4 \right)\right) \left(k^4 \right) \left(k^4$ $\left(-\frac{1}{e^{-\frac{1}{2}}} \left(-\frac{1}{e^{-\frac{1}{2}}} \right) \right) \le \frac{1}{e^{-\frac{1}{2}}} \left(-\frac{1}{e^{-\frac{1}{2}}} \right) \le \frac{1}{e^{-\frac{1}{$ $\left(H^2 k^2+3\right)^3+O\left(\left(text\{dt\}^4\right)\right)+O\left(text\{dx\}^5\right)\right)$

Out[257]=

Out[258]=

$$\begin{split} & 169472 \sqrt{g} \, H^{13} (3 + H^2 \, k^2) \quad U^3 + g \, H^7 \, U \left(108089 \sqrt{g} \, H \left(3 + H^2 \, k^2 \right) + 456644 \sqrt{3} \quad U \right) \right) + \\ & 9 \, k^4 \left(7035 \sqrt{g^3 \, H^{13}} \left(3 + H^2 \, k^2 \right) + 153703 \sqrt{3} \, g^2 \, H^6 \, U + 254208 \sqrt{g} \, H^9 \left(3 + H^2 \, k^2 \right) \, U^4 + \\ & g \, H^3 \, U^2 \left(347651 \sqrt{g} \, H \left(3 + H^2 \, k^2 \right) + 1700818 \sqrt{3} \, U \right) \right) \right) dr^4 + O[dt]^3 \right) dr^4 + O[dt]^5 + O[dt]^5 \right) dr^4 + O[dt]^5 \right) dr^4 + O[dt]^5 \right) dr^4 + O[dt]^5 + O[dt]^5 \right) dr^4 + O[dt]^5 \right) dr^4 + O[dt]^5 \right) dr^4 + O[dt]^5 + O[dt]^5 + O[dt]^5 \right) dr^4 + O[dt]^5 + O[dt$$

$$\begin{array}{c} 9\,k^4\left(-31\,231\,\sqrt{3}\,\,g^2\,H^6\,U + 2\,g\,H^5\,U^2\left(34\,336\,\sqrt{g\,H\,(3+H^2\,k^2)}\,\,-67\,003\,\sqrt{3}\,\,U\right) + \\ 288\left(5\,\sqrt{g^5\,H^{13}\,(3+H^2\,k^2)}\,\,+162\,\sqrt{g\,H^9\,(3+H^2\,k^2)}\,\,U^4\right)\right)\right)dt^3 - \frac{1}{92\,160\left(\sqrt{g\,H}\,(3+H^2\,k^2)^{11/2}\right)} \\ \left(k^9\left(\sqrt{3}\,\,\sqrt{g\,H\,(3+H^2\,k^2)}\,\,-\left(3+H^2\,k^2\right)\,U\right)\left(k^8\,U^3\left(-111\,559\,\sqrt{3}\,\,g\,H^9 + 42\,368\,\sqrt{g\,H^{17}\,(3+H^2\,k^2)}\,\,U\right) + \\ 27\,k^2\left(18\,078\,\sqrt{g^5\,H^9\,(3+H^2\,k^2)}\,\,-172\,047\,\sqrt{3}\,\,g^2\,H^4\,U + 372\,075\,\sqrt{g^3\,H^7\,(3+H^2\,k^2)}\,\,U^2 - \\ 477\,940\,\sqrt{3}\,\,g\,H^3\,U^3 + 169\,472\,\sqrt{g\,H^5\,(3+H^2\,k^2)}\,\,U^4\right) + \\ 9\,k^4\left(7035\,\sqrt{g^5\,H^{13}\,(3+H^2\,k^2)}\,\,-153\,703\,\sqrt{3}\,\,g^2\,H^6\,U + 254\,208\,\sqrt{g\,H^9\,(3+H^2\,k^2)}\,\,U^4 + \\ g\,H^5\,U^2\left(347\,651\,\sqrt{g\,H\,(3+H^2\,k^2)}\,\,-700\,818\,\sqrt{3}\,\,U\right)\right) + \\ 81\left(11\,603\,\sqrt{g^5\,H^5\,(3+H^2\,k^2)}\,\,-63\,917\,\sqrt{3}\,\,g^2\,H^2\,U + 42\,368\,\sqrt{g\,H\,(3+H^2\,k^2)}\,\,U^4 + \\ g\,H\,U^2\left(132\,513\,\sqrt{g\,H\,(3+H^2\,k^2)}\,\,-122\,207\,\sqrt{3}\,\,U\right)\right) - \\ 3\,k^6\,U\left(45\,573\,\sqrt{3}\,\,g^2\,H^8 - 169\,472\,\sqrt{g\,H^{13}\,(3+H^2\,k^2)}\,\,U^3 + \\ g\,H^7\,U\left(-108\,089\,\sqrt{g\,H\,(3+H^2\,k^2)}\,\,+456\,644\,\sqrt{3}\,\,U\right)\right)\right)\right)dt^4 + O[dt]^5\right)dx^4 + O[dx]^5\right\} \end{array}$$

Out[260]= Omega error ||

 $\left(\frac{h^2 U k^3+3 U k+\sqrt{1}}{16ft(\frac{h^2 U k+\sqrt{1}}{$ $\label{left} $$k^2+3\right)^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{h^2}{h^2}-\frac{$ $\label{left} $$\left(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)} U+2 \right) \ H\left(\frac{4^2 k^2 + 3\right)}\right)\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)} U+2 \right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}}\right) \ def(\frac{3 + 4 \left(\frac{4^2 k^2 + 3\right)}{16^2 k^2 + 3}}$ $k^2+3\right)$ $k^2+9 \left(U+\sqrt{3} \right) U^2+3 g \left(U+\sqrt{3} \right) U^2+3 u \left(U+\sqrt{3} \right) U^2+3 u \left(U+\sqrt{3} \right) U^2+3 u \left(U+\sqrt{3} \right) U^2+3$ $k^2+3\right\} \ U+\sqrt{3} \ H \left(H^2 k^2+3\right) \ U+C H^2 U k^4+2 \left(H^3 U H^2+2 H^2 U h^4 U h^4+2 H^2 U h^4+2 U h^4+2$ $\$ \sqrt{3} \sqrt{g H^5 \left(H^2 k^2+3\right)} \right) \right) \k^2+9 U+12 \sqrt{3} \sqrt{g H \left(H^2 k^2+3\right)} \right) \right) \right) $U^3+6 g H \left(3 \left(\frac{4^2 + 3\right)}{U+2 \left(\frac{4}{2} \right)} \right) + \left(\frac{4^2 + 3\right)}{U+2 \left(\frac{4}{2} \right)}$ $H^2\left(\frac{dt}^5 \left(\frac{dt}^4}{5 \left(\frac{dt}^4}\right)^4\right) + \left(\frac{dt}^6 \left(\frac{dt}^4}{5 \left(\frac{dt}^4}\right)^4\right) + \left(\frac{dt}^6 \left(\frac{dt}^4}{5 \left(\frac{dt}^4}\right)^4\right) + \left(\frac{dt}^4 \left(\frac{dt}^4}{5 \left($ $\label{left} $\left(2\ U+\sqrt{3}\right) \left(\frac{3}{3} \right) + \frac{1}{2} \left(\frac{4}{3}\right) -\frac{1}{3} \left(\frac{4}{3}\right) -\frac{1}{3$ \sqrt{g H \left(H^2 k^2+3\right)}\right) \left(\sqrt{3} g H+2 \sqrt{g H \left(H^2 k^2+3\right)} U\right)\right) $\label{left} $$ \operatorname{dt}_{4 \leq t} \left(\frac{d^2 k^2+3\right)^{3/2}\right)^{-\frac{t}{4}} e^{t} \ H^2 \left(\frac{d^2 k^2+3\right)^{3/2}\right)^{-\frac{t}{4}} e^{t} \ H^2 \left(\frac{d^2 k^2+3\right)^{3/2}}{e^{t}} e^{t} \ H^2 \left(\frac{d^2 k^2+3}{e^{t}} e^{t} \right) \ H^2 \left(\frac{d^2 k^2+3}{e$ $\label{left} $$ k^2+3\right)\right) \operatorname{left}(H^2 k^2+3\right)^{3/2}+\frac{k^5 \left(\frac{h^2}{4 \cdot q^2}\right)^{3/2}}+\frac{k^5 \left(\frac{h^2}{4 \cdot q^2}\right)^{3/2}}{h^2}+\frac{h^2}{4 \cdot q^2}\right)^{3/2}}+\frac{h^2}{4 \cdot q^2}$ $g H+2 \left(H^2 k^2+3\right) U\right) \left(H^4 U k^4+3 \left(U H^2+\sqrt{3} \right) \right)$ $H^5 \left(H^2 k^2+3\right)\right) + h^2 \left(U+\sqrt{3} \right) + h^2 \left($ $U^2+3 g \left(\frac{k^2 U H^3+9 U H+\sqrt{3} \right) + \left(\frac{k^2 + 3 \right) H \left(\frac{k^2 + 3 \right) H}{1 + \frac{k^2 + 3 \right) H}} H \left(\frac{k^2 U H^3+9 U H+\sqrt{3} \right) + \frac{k^2 U H^3+9 U H+\sqrt{3} \left(\frac{k^2 U H^3+9 U H+\sqrt{3} \right) H}{1 + \frac{k^2 U H^3+9 U H+\sqrt{3} \left(\frac{k^2 U H+\sqrt{3} \right) H}{1 + \frac{k^2 U H+\sqrt{3} U H+\sqrt{3$ $\left(\frac{H}\left(\frac{A^2 + 3\right)}{5/2} + \frac{k^6 \left(\frac{3}{g} + 2\right)}{2} \right)$ $U = U + 2 \left(\frac{4 U k^4 + 2 \left(\frac{3 U k^4 + 2 \left(\frac{3 U k^4 + 2 \left(\frac{4 U k^$ $U+12 \sqrt{3} \sqrt{4^2 + 3 + 2^2} U^3+6 g H \left(\frac{4^2 k^2+3 \right) U+2$ \sart{3} \sart{6} H\left(H^2 k^2+3\right)\\right) II+9 o^2 H^2\right)\\text{dt}\^1\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lambda\lam

waters waters in menting a 213 mismer with the 211 and 112 mismer meaning the contract a $k^2+3\right)^{5/2}+O\left(\left(\frac{dt}^5\right)\right)\right) + O\left(\frac{dt}^5\right)$ $k^2+13\right) + 16 \left(\frac{H^2 k^2+3\right) k^2+3 \left(\frac{H$ $U = \frac{3}{2} \left(\frac{4 \left(\frac{4^2 k^2 + 3\right)^{3/2} \cdot (3^4 \cdot (3$ H^4 k^4+234 H^2 k^2+369\right) U+144 \sqrt{g H \left(H^2 k^2+3\right)\right)+4 \left(7 \sqrt{g H^9} $\left(H^2 k^2+3\right) U^2 k^4+3 \left(H^5 \left(H^2 k^2+3\right) U^2+3 \right) U^2+3$ $\left(H^2 k^2+3\right)\right) \ h^2+63 \ gH\left(H^2 k^2+3\right) \ U^2\right) \ h^2+63 \ h^$ $\left(H^2 k^2+3\right) \right) \left(H^2 k^2+3\right) \left$ $\left(H^2 k^2+3\right)\right) + \left(H^2 k^2+3\right) + \left(H^2 k^2+$ $\sqrt{g H^5 \left(H^2 k^2+3\right)} U^2+3 \sqrt{g^3 H^7 \left(H^2 k^2+3\right)} \right) v^2+3 \sqrt{g H}$ $\label{left(H^2 k^2+3\wedge light)} $$ \left(H^2 k^2+3\right) U^2\right) \left(H^2 k^2+3\right) U^2\right) + \frac{dt}^2 H^2 k^2+3\left(H^2 k^2+3\right) U^2\right) + \frac{dt}^2 H^2 k^2+3\left(H^2 k^2+3\right) U^2\left(H^2 k^$ $k^6 \left(\frac{A^2 + 3\right)}{U + \sqrt{16}(H^2 k^2 + 3\right)} \right) U + \left(\frac{H^2 k^2 + 3\right)}{U + \sqrt{16}(H^2 k^2 + 3\right)} \right) U + \left(\frac{H^9 k^2 + 3\right)}{U + \sqrt{16}(H^2 k^2 + 3\right)}$ $\left(H^2 k^2+3\right) U^2 k^4+6 \left(52 \right) H^5 \left(H^2 k^2+3\right) U^2+9 \right) U^2+9$ $\label{left(H^2 k^2+3\wedge light)} $$ \left(H^2 k^2+3\wedge light)\right) V^2+g H \left(h^2 k^2+3\wedge light)\right) U^2+g H \left(h^2 k^2+3\wedge light)$ $H^4 k^4+378 H^2 k^2+585\right) U+198 \sqrt{H^2 k^2+3\left(H^2 k^2+3\right)}\right) \left(H^2 k^2+3\right) \left(H^2 k^2+$ $\$ \sqrt{g H} \left(H^2 k^2+3\right)^{9/2}}-\frac{\\left(k^7 \\left(\\left(H^2 k^2+3\right) U+\\sqrt{3} \\sqrt{g}} $H \left(\frac{H^2 k^2+3\right)}{0.0000}$ \sqrt{g H \left(H^2 k^2+3\right)} U^2+g H \left(\sqrt{3} \left(73 H^4 k^4+450 H^2 k^2+693\right) $U+225 \left(H \left(H^2 k^2+3\right) \right)\right) \left(H^2 k^2+3\right) \left($ g H \left(7 H^2 k^2+3\right)+16 \left(\sqrt{g H^5 \left(H^2 k^2+3\right)} k^2+3 \sqrt{g H \left(H^2 k^2+3\right)} k^2+3 \sqrt $$k^2+3\right\in U\rightarrow H \left(H^2 k^2+3\right) \ U\rightarrow H \left(H^2 k^2+3\right) \ H \left(H^2 k^2+3$ $\left(19 \text{ H}^4 \text{ k}^4 + 126 \text{ H}^2 \text{ k}^2 + 207\right)\right) + 16 \left(19 \text{ H}^2 \text{ k}^2 + 3\right)\right)$ $H^9 \left(H^2 k^2 + 3\right) U^2 k^4 + \left(6 \right) H^5 \left(H^2 k^2 + 3\right) U^2 + \left(H^2 k^2 + 3\right) U^2 +$ $\left(H^2 k^2+3\right) \$ \left(H^2 k^2+3\right) \right) \right) \\ \left(H^2 k^2+3\right) \\ U^2\right) \\ \text{dt}{128} $\left(H^2 k^2 + \frac{h^2 k^2 + 3 \right) H^2 + \frac{h^2 k$ g U \left(\sqrt{3} \left(13 $h^4 k^4 + 82 h^2 k^2 + 129 \right) U + 96 \left(H \left(h^2 k^2 + 3 \right) \right) right)$ $H+32 \left(\frac{H^9 \left(\frac{H^2 k^2+3\right)} U^3 k^4+2 \left(\frac{H^5 \left(H^2 k^2+3\right)} U^3 k^4+2 \right) }{U^3 k^4+2 \left(\frac{H^5 \left(\frac{H^2 k^2+3\right)} U^3 k^4+2 \right) }{U^3 k^4+2 \left(\frac{H^5 u^4 u^4}{U^3 u^4} \right) } \right) }$ $\label{eq:u-3+2-sqrt} $$ U^3+2 \left(\frac{g^3 H^7 \left(\frac{h^2 k^2+3\right)}{U + g^4} \right) V^2+9 \left(\frac{h^2 k^2+3\right)}{U + g^4} \right) $$$ $k^2+3\right) U+\sqrt{3} \left(H^2 k^2+3\right) \left(H$ $k^2 + 21 \mid H^2 + 3 \mid U \mid H^$ H \left(H^2 k^2+3\right)\right) H+5 \left(32 \sqrt{g H^9 \left(H^2 k^2+3\right)} U^3 k^4+3 \left(64 $\$ \\sqrt{g H^5 \left(H^2 k^2+3\right)} U^3+39 \\sqrt{g^3 H^7 \left(H^2 k^2+3\right)} U\right) k^2+288 $\label{left} $$ \operatorname{H}\left(H^2 k^2+3\right) U^3\right) \left(H^2 H^2 k^2+3\right) U^3\right) \$ $k^2+3\right)^{7/2}\right)-\frac{k^2+3\right)^{7/2}\right)-\frac{k^2+3\right)^{7/2}}$ $k^2+3\right) \left(\frac{40 \operatorname{ft}(80 \operatorname{ft}(40 \operatorname{f$ \left(H^2 k^2+3\right)} U^3+137 \sqrt{g^3 H^7 \left(H^2 k^2+3\right)} U\right) k^2+720 \sqrt{g H $\left(\frac{H^2 k^2+3\right)}{U^3+5 \sqrt{149}} U^3+5 \sqrt{149} \left(\frac{11 H^2 k^2+45\right)}{U^3+5 \sqrt{149}} U \left(\frac{149}{U^3+5} \right)$ H^4 k^4+930 H^2 k^2+1449\right) U+990 \sqrt{g H \left(H^2 k^2+3\right)\right)\right)\right)\text{dt}^4\{128} $\left(H \left(H^2 k^2 + 3\right) \right) \left(H^2 k^2 + 3\right) \right)$ $\sqrt{3} g H \left(15 H^4 k^4+146 H^2 k^2+543\right) + 256 \left(\frac{15 H^6 k^4+146 H^2 k^2+3\right)}$

 $k^4 + 6 \operatorname{left}(H^2 k^2 + 3 \operatorname{left}(H^2 k^2$ \sqrt{3} U H^4+960 \sqrt{g H^9 \left(H^2 k^2+3\right)\right) k^4+45735 \sqrt{3} H^2 U k^2+51039 $\$ \\ \quad \\ H\\left(H^2 \\ \^2+3\\ \right)\\ H(31 \\ \\ H^{13} \\ H^{13} \\ H^2 \ $k^2 + 3 \right) U^2 k^6 + 279 \left(g H^9 \left(H^2 k^2 + 3\right) U^2 k^4 + 27 \left(31 \right) \right) H^5$ $\left(H^2 k^2+3\right) U^2+7 \left(g^3 H^7 \left(H^2 k^2+3\right)\right) k^2+837 \left(g^4 H^2 \left(H^2 k^2+3\right)\right)$ \left(9 \sqrt{3} g^2 \left(775 H^4 k^4+6258 H^2 k^2+12999\right) H^2+g U \left(20551 \sqrt{3} H^6 U k^6+3 \left(65021 \sqrt{3} U H^4+12288 \sqrt{g H^9 \left(H^2 k^2+3\right)\right) k^4+617661 \sqrt{3} H^2 U k^2+81 \left(8053 \sqrt{3} U+5888 \sqrt{g H \left(H^2 k^2+3\right)\right)\right) H+128 \left(86 $\$ \\sqrt{g H^{13} \\left(H^2 k^2+3\right)} U^3 k^6+774 \\sqrt{g H^9 \\left(H^2 k^2+3\right)} U^3 k^4+9 $\left(258 \right) \left(H^5 \left(H^2 k^2+3\right) U^3+229 \right) H^7 \left(H^2 k^2+3\right) U\right)$ $k^2 + 2322 \left(H \left(h^2 k^2 + 3 \right) \right) U^3\right) \left(h^2 k^2 + 3 \right) \left($ $H} \left(H^2 k^2 + 3 \right)^{7/2} \right) - \frac{i k^8 \left(U^3 \left(21253 \right) + 13 \right)}{16}$ $H^{17} \left(H^2 k^2 + 3\right) U\right) V \left(h^8 + 3 U \right) \left(h^8 + 3 U \right$ $U+5312 \sqrt{H^2 + 13} \left(H^2 + 13 \right) \left(H^2 + 13 \right)$ $U^3 + b^4 = 1331 + 3 g^2 U + 6 + 2 g U^2 + 6 f^3 = 13 U + 34336 + 2 g U^2 + 6 f^3 = 13 U + 34336 + 2 g U^2 + 6 f^3 = 13 U + 34336 + 2 g U^2 + 6 f^3 = 13 U + 34336 + 2 g U^2 + 6 f^3 = 13 U + 34336 + 2 g U^2 + 6 f^3 = 13 U + 34336 + 2 g U^2 + 6 f^3 = 13 U + 34336 + 2 g U^2 + 6 f^3 = 13 U + 34336 + 2 g U^2 + 6 f^3 = 13 U + 34336 + 2 g U^2 + 6 f^3 = 13 U + 34336 + 2 g U^2 + 6 f^3 = 13 U + 34336 + 2 g U + 2 U + 6 f^3 = 13 U + 34336 + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U + 2 U +$ $\left(\frac{H^2 k^2+3\right)}{H^5+288 \left(\frac{162 \sqrt{162} k^2+3\right)} U^4+5 \sqrt{162}} \right)$ $H^{13} \left(H^2 k^2+3\right)\right) \$ $\left(H^2 k^2+3\right) U^4+g H\left(7823 \right) + 18832 \left(H^2 k^2+3\right) U^4+g H\left(1823 \right)$ $U^2 + 4423 \left(3 \right) g^2 H^2 U + 832 \left(g^5 H^5 \left(H^2 k^2 + 3 \right) \right) \right) \left(h^2 k^2 + 3 \right) \right) \\ U^2 + 4423 \left(g^5 H^2 U + 832 \right) \left(h^2 k^2 + 3 \right) \right) \\ U^2 + 4423 \left(g^5 H^2 U + 832 \right) \left(h^2 U + 832 \right) \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \left(h^2 U + 832 \right) \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^2 + 4423 \left(h^2 U + 832 \right) \\ U^$ $\$ \\sqrt{g H} \\left(H^2 k^2+3\right)^{9/2}}+\\frac{k^9 \\left(\\left(H^2 k^2+3\right) U+\\sqrt{3} \\sqrt{g H}} $\left(H^2 k^2+3\right)\right)$ k^2+3\right)} U\right) k^8+3 U \left(45573 \sqrt{3} g^2 H^8+g U \left(456644 \sqrt{3} U+108089 $\$ \\ \quad \\ \eft(\(H^2 k^2+3\\right)\\\ H^7+169472 \\ \quad \\ H^{{13}} \\ \eft(\(H^2 k^2+3\\right)\\\ U^3\\\ right)\\ \quad \\ \quad \\ \quad \\ \quad \\ H^{{13}} \\ H^{{1 k^6+9 \left(153703 \sqrt{3} g^2 U H^6+g U^2 \left(700818 \sqrt{3} U+347651 \sqrt{g H \left(H^2 $k^2+3\right) h^5+254208 \left(H^9 \left(H^2 k^2+3\right) \right) U^4+7035 \left(H^5 H^5 H^6\right) h^6$ k^2+3\right)\right) k^4+27 \left(172047 \sqrt{3} g^2 U H^4+477940 \sqrt{3} g U^3 H^3+169472 $\$ \\sqrt{g H^5 \left(H^2 k^2+3\right)} U^4+372075 \\sqrt{g^3 H^7 \left(H^2 k^2+3\right)} U^2+18078 $\$ \\ sqrt{g^5 H^9 \\ left(H^2 k^2+3\\ right)\\ right) \\ k^2+81 \\ left(42368 \\ sqrt{g H \\ left(H^2 k^2+3\\ right)\\ U^4+g H \left(122207 \sqrt{3} U+132513 \sqrt{g H \left(H^2 k^2+3\right)\right) U^2+63917 \sqrt{3} g^2 H^2 $U+11603 \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^2 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 k^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 h^2 + 3\right) \right) \left(g^5 H^5 \left(H^4 h^2 h^2 \right) \right) \left(g^5 H^5 \left(H^4 h^$ $k^2+3\right)^{11/2}+O\left(\left(\frac{dt}^5\right)\right) \cdot \left(\frac{dt}^4+O\left(\frac{dt}^5\right)\right) \cdot \left(\frac{dt}^4+O\left(\frac{dt}^4\right)\right) \cdot \left(\frac{dt}^4\right) \cdot \left(\frac{dt}^4+O\left(\frac{dt}^4\right)\right) \cdot \left(\frac{dt}^4\right) \cdot \left$ $\left(H^2 \cup k^3+3 \cup k-\sqrt{3}\right) \left(H^2 \cup k^3+3 \cup k^3+3 \cup k-\sqrt{3}\right) \left(H^2 \cup k^3+3 \cup k^3+$ $\label{eq:left} $$ k^2+3\right)^2-\frac{h^2 k^2+3\right) U-\sqrt{3} \operatorname{H}\left(\frac{h^2 k^2+3\right)}\right)^2-\frac{h^2 k^2+3\right)^2}-\frac{h^2 k^2+3}{h^2 k^2+3}-\frac{h^2 k^2+3}{h^$ $\label{left(H^2 k^2+3\wedge ight) U-2 sqrt{3} sqrt{g } H \left(\frac{h^2 k^2+3\wedge ight}{right}\right) right) right}$ $\label{left} $$\left(dt^2 k^2+3\right)^2-\frac{k^4 \left(\frac{h^2 k^2+3\right) U-\sqrt{4} H}{k^2 k^2+3\right) U-\sqrt{4} H} dt^2 k^2+3\right) U-\sqrt{4} H}$$$ $\left(H^2 k^2+3\right)\right)\right) \left(H^4 U k^4-3\left(4 U k^4-3 \left(4 H^5 \left(H^5 k^2+3\right)\right)\right)\right)$ $H^2 U \mapsto k^2+9 U-9 \sqrt{3} \left(H^2 k^2+3\right) U-2+3 g H \left(H^2 k^2+3\right)$ $\label{left} $$k^2+3\right\oplus U-\sqrt{3} \operatorname{H}\left(H^2 k^2+3\right)\right\rangle \left(H^2 k^2+3\right) \$ $k^2+3\right)^3+\frac{k^5 \left(H^2 k^2+3\right)}{U-\sqrt{3} \sqrt{3} \left(H^2 k^2+3\right)}\right)}$

\left(\left(H^4 U k^4+\left(6 H^2 U-4 \sqrt{3} \sqrt{g H^5 \left(H^2 k^2+3\right)}\right) k^2+9 $U-12 \sqrt{3} \sqrt{g H \left(\frac{h^2 k^2+3\right)}{t^3+6 g H \left(\frac$ $U-2 \sqrt{3} \sqrt{3} \sqrt{4} + \frac{h^2 k^2+3\right} \int U-9 g^2 H^2\right) \left(\frac{4t}^4}{5} \left(\frac{4t}^4}{5} \right) \right)$ $\label{left} $$k^2+3\right)^3}+O\left(\frac{d^{5}\right)+\left(\frac{1}{4} i k^2 \left(\frac{3} \sqrt{3} \right)^3}{16\pi(3)^3}-\frac{1}{4} i k^2 \left(\frac{3} \sqrt{3} \right)^3}\right)^3+O\left(\frac{3} \sqrt{3} \right)^3+O\left(\frac{3} \sqrt{3} \right)^3$ $H_{H^2 k^2+3}-2 U + \frac{k^3 \left(\frac{k^3 \left(\frac{k^2 + 3}{r}\right)}{U-\sqrt{3}}\right)}{U-\sqrt{3}} \right)$ $k^2+3\right) \left(\frac{1}{4 \operatorname{sqrt}{g H \cdot eft(H^2 k^2+3\right)} U\right) \left(\frac{1}{4 \operatorname$ $\label{left} $$\left(H^2 k^2+3\right)^{3/2}+\frac{i k^4 \left(\sqrt{3} gH-2 \right)^{2} H \left(H^2 k^2+3\right)^{2} U\right)^{3/2}} + \frac{1}{3} gH-2 \left(H^2 k^2+3\right)^{2} H \left(H^2 k^2+3\right)^{2} U\right)^{3/2} H \left(H^2 k^2+3\right)^{3/2} H \left(H^2 k^2+3\right)^{3$ $\left(3 g H+U \left(\frac{A^2 k^2+3\right) U-2 \right) + \left(\frac{B H}{B k^2 + 3 \right)}\right)$ $\t \{dt\}^2\} \{ \sqrt{dt}^2 + \sqrt{dt}^2 + \sqrt{dt}^2 \} = \frac{dt}^2 \} = \frac{dt}^2 + \frac{dt}^2$ $\label{left(H^2 k^2+3\wedge ight)} $$ U\rightarrow \left(H^4 U k^4-3\left(\frac{3}\right)\right) \left(H^5 \left(H^2 k^2+3\right)\right)-2 $$$ $H^2 U \cdot h^2 U - 9 \cdot grt{3} \cdot gH \cdot (H^2 k^2+3 \cdot gh) \cdot h^2 H \cdot h^2 U - gh$ $k^2+3\right) U-\sqrt{g} H \left(h^2 k^2+3\right) \right) \left(U-\sqrt{g} \right) \left(h^2 k^2+3\right) \right) \left(u-\sqrt{g} \right) \left(h^2 k^2+3\right) \left(h^2 k^2+3\right)$ $H} \left(\frac{h^2 k^2+3 \right)^{5/2} \right) - \frac{k^6 \left(\frac{h^2 k^2+3 \right)^{5/2} \right)}{h^2 k^2 + 3 \right)} - \frac{k^6 \left(\frac{h^2 k^2+3 \right)^{6/2} \right)}{h^2 k^2 + 3 \right)} - \frac{k^6 \left(\frac{h^2 k^2+3 \right)}{h^2 k^2 + 3 \right)}{h^2 k^2 + 3 \right)} - \frac{k^6 \left(\frac{h^2 k^2+3 \right)}{h^2 k^2 + 3 \right)}{h^2 k^2 + 3 \right)} - \frac{k^6 \left(\frac{h^2 k^2+3 \right)}{h^2 k^2 + 3 \right)}{h^2 k^2 + 3 \right)} - \frac{k^6 \left(\frac{h^2 k^2+3 \right)}{h^2 k^2 + 3 \right)}{h^2 k^2 + 3 \right)} - \frac{k^6 \left(\frac{h^2 k^2+3 \right)}{h^2 k^2 + 3 \right)}{h^2 k^2 + 3 \right)} - \frac{k^6 \left(\frac{h^2 k^2+3 \right)}{h^2 k^2 + 3 \right)}{h^2 k^2 + 3 \right)}{h^2 k^2 + 3 \left(\frac{h^2 k^2+3 \right)}{h^2 k^2 + 3 \right)} - \frac{k^6 \left(\frac{h^2 k^2+3 \right)}{h^2 k^2 + 3 \right)}{h^2 k^2 + 3 \left(\frac{h^2 k^2+3 \right)}{h^2 k^2 + 3 \right)}$ $U + \left(\left(\frac{H^4 U k^4 + \left(6 H^2 U - 4 \right) - 4 \left(H^5 \left(H^2 k^2 + 3 \right) \right) \right) }{H^5 U - 4 \left(H^5 \left(H^5 \right) - 4 \right) }$ $U-2 \sqrt{3} \sqrt{3} \sqrt{4} 4 \sqrt{2+3}\right) U+9 g^2 H^2\right) \left(\frac{4}{3} \right)$ $H \left(3 + 2 k^2 + 1\right) - 16 \left(\frac{4 + 2 k^2 + 3 \right) U k^2 + 3 \left(\frac{4 k^2 + 3 \right) U k^2 + 3 \left(\frac{4 k^2 + 3 \right)}{U k^2 + 3 \left$ $k^2+3\right) U\right) U\right) {ght}\6 \sqrt{g} H \left(\frac{H^2 k^2+3\right)^3} + \frac{k^4 \left(\frac{H}{g} H \right)^{3/2}}{h^2} \right)$ $\left(37 \text{ H}^4 \text{ k}^4+234 \text{ H}^2 \text{ k}^2+369\right) \text{ U}-144 \right) \text{ H}\left(\frac{1}{2} \text{ k}^2+3\right) \left(\frac{1}{2} \text{ H}\right) \left(\frac{1}{2} \text{ k}^2+3\right) \left(\frac{1}{2} \text{ H}\right) \left(\frac{1}{2} \text{ k}^2+3\right) \left(\frac{1}{2} \text{ H}\right) \left(\frac{1$ $\$ \\sqrt{g H^9 \left(H^2 k^2+3\right)} U^2 k^4+3 \left(14 \sqrt{g H^5 \left(H^2 k^2+3\right)} U^2+3 $\left(\frac{g^3 H^7 \left(H^2 k^2+3\right)}\right) k^2+63 \right) k^2+63$ $\label{eq:left(h^2 k^2+3\wedge fight)^{5/2}}-\frac{\left(k^5 \left(\frac{3} \right) + \left(\frac{4}{3} \right)}{1 + \frac{1}{3} \left(\frac{4}{3} \right)} \right)}$ $\label{eq:k-2+3-right} $$ k^2+3\right)-\left(H^2 k^2+3\right)+\left(H^2 k^2+3\right)-\left(H^2 k^2+3\right)+H^2 k^2+3\left(H^2 k^2+3\right)-\left(H^2 k^2+3\right)-\left(H^2 k^2+3\right)-\left(H^2 k^2+3\right)-\left(H^2 k^2+3\right)+H^2 k^2+3\left(H^2 k^2+3\right)-\left(H^2 k^2+3\right)+H^2 k^2+3\left(H^2 k^2+3\right)+H^2 k^2+3\left(H^2 k^2+3\right)-H^2 k^2+3\left(H^2 k^2+3\right)$ \left(49 H^4 k^4+306 H^2 k^2+477\right) U\right)+5 \left(8 \sqrt{g H^9 \left(H^2 k^2+3\right)} U^2 $k^4+3 \left(16 \right) H^5 \left(16 \right) U^2+3 U^2$ $\label{left} $$k^2+72 \operatorname{left}(H^2 k^2+3\right) U^2\right) \to \label{left} $$h^2+3\right) U^2\right) \to \label{left} $$h^2+3\right) $$$ $\left(H^2 k^2+3\right)^{7/2}\right)+\frac{k^6 \left(\sqrt{3} \sqrt{3} \right)}{16H(H^2 k^2+3\right)}-\left(H^2 k^2+3\right)^{7/2}\right)$ $k^2 + 3 \mid U \mid V \mid h^2 \mid h^3 \mid H^5 \mid h^2 \mid h^3 \mid h^3$ $\left(H^2 k^2+3\right) U^2+9 \left(g^3 H^7 \left(H^2 k^2+3\right) k^2+468 \right) U^2+9 \left(g^3 H^7 \left(H^2 k^2+3\right) k^2+468 \right)$ $k^2+3\right) U^2+g H \left(198 \right) U^2+g H \left(198 \right) -\left(198 \right) -\left(198 \right) U^2+g H \left(198 \right) U^2+g H \left($ $\left(\frac{3} \left(\frac{4 \cdot 2}{3}\right) - \left(\frac$ H^9 \left(H^2 k^2+3\right)\} U^2 k^4+3 \left(128 \sqrt{g H^5 \left(H^2 k^2+3\right)\} U^2+21 $H \left(\frac{22} \right) - \frac{4^2 + 4^2 + 1}{10^2 + 2^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2$ $U\left(\frac{dt}^4}{96 \right) \left(\frac{4t}^4}{96 \right) \left(\frac{4t}{96 \right) \left(\frac{4$ \text{dx}^2+\left(\frac{i k^4 \left(\sqrt{3} g H \left(7 H^2 k^2+33\right)-16 \left(\sqrt{g H^5 \left(H^2 $k^2+3\right) U k^2+3 \left(H \left(h^2 k^2+3\right) U\right) \left(h^2 k^2+3\right) \left(h^2 k^$ $k^2+3\right)^{3/2}+\frac{k^5\left(H + \left(H^2 \right)^{2/2} + \left(H^2 \right)^{-3/2}}{h^2} \left(H^2 + \left(H^2 \right)^{-3/2} + \left(H^2 \right)^{-3/2}} \right)^{-3/2}$ k^4+126 H^2 k^2+207\right) U\right)+16 \left(\sqrt{g H^9 \left(H^2 k^2+3\right)} U^2 k^4+\left(6) $\$ \sqrt{g H^5 \left(H^2 k^2+3\right)} U^2+\sqrt{g^3 H^7 \left(H^2 k^2+3\right)}\right) k^2+9 \sqrt{g H} $\label{left(H^2 k^2+3\circ h) U^2\circ h} $$\left(H^2 k^2+3\right) U^2\right)^{5/2}+\frac{dt}{128 \cdot gH} \left(H^2 k^2+3\right)^{5/2}+\frac{dt}{128 \cdot gH} \right)^{5/2}+\frac{dt}{128 \cdot gH} \left(H^2 k^2+3\right)^{5/2}+\frac{dt}{128 \cdot g$

k^6 \left(-9 \sqrt{3} g^2 \left(3 H^2 k^2+13\right) H^2-5 g U \left(\sqrt{3} \left(13 H^4 k^4+82 H^2)) $H^2 k^2+129$ right) U-96 \sqrt{g H \left(H^2 k^2+3\right)} right) H+32 \left(\sqrt{g H^9 \left(H^2 k^2+3\right)}) right) $k^2+3\right) U^3 k^4+2\left(3 \right) U^3 +2 \left(1 - 2 k^2+3\right) U^3+2 \right) U^3+2 \left(1 - 2 k^2+3\right) U^3+2 \left(1 - 2 k^2+3\right) U^3+2 U^3+2$ $k^2+3\right) U\right) U'$ $\$ \\ \left(H^2 k^2+3\right)^{5/2}}+\\ frac{k^7 \left(\left(H^2 k^2+3\right)U-\right)} U-\ $\left(H^2 k^2+3\right)\right)$ \left(103 H^4 k^4+646 H^2 k^2+1011\right) U-717 \sqrt{g H \left(H^2 k^2+3\right)\right) H-5 $\left(32 \right) H^9 \left(H^2 k^2+3\right) U^3 k^4+3 \left(4 \right) H^5 \left(H^2 k^2+3\right)$ $U^3+39 \sqrt{f^2 H^2 k^2+3 + f^2 L^2} U + k^2+3k^2 + k^2 +$ $\left(H^2 k^2+3\right) -\left(H^2 k^2+3\right) -\left(H^2 k^2+3\right) U\right) U\right)$ k^2+45\right) H^2+g U \left(\sqrt{3} \left(149 H^4 k^4+930 H^2 k^2+1449\right) U-990 \sqrt{g H $\left(H^2 k^2+3\right) + H-2 \left(40 \right) + H-2 \left(H^2 k^2+3\right) + U^3 k^4+\left(40 \right) + H-2 \left(H^2 k^2+3\right) + U^3 k^4+\left(H^2 k^2+3\right) + U^3 k^4+\left(H^4 k^2+3\right) + U^3 k^4+\left(H^4 k^2+3\right) + U^3 k^4+\left(H^4 k^2+3\right) + U^3 k^4+\left(H^4 k^2+3\right) + U^4 k^4+\left(H^4 k^4+4\right) + U^4 k^4+\left(H^$ \sqrt{g H^5 \left(H^2 k^2+3\right)} U^3+137 \sqrt{g^3 H^7 \left(H^2 k^2+3\right)} U\right) $k^2+360 \operatorname{ft}(H^2 k^2+3\operatorname{ht}) U^3\operatorname{ht}\right) \operatorname{text}(dt)^4{128 \operatorname{tt}(H^2 k^2+3\operatorname{ht})} U^3\operatorname{ht}\right)$ $\label{left(xyyy} $$ k^2+3\right)^{9/2}}+O\left(\frac{t}{5}\right)\right) \cdot \left(\frac{dt}{5}\right) \cdot \left(\frac{dx}{3}+\left(\frac{dx}{3}\right)\right) \cdot \left(\frac{dx}{3}\right) \cdot \left(\frac{dx}{3}\right)$ $H^9 \left(H^2 k^2+3\right) k^4+6 \left(H^2 k^2+3\right) k^2+9 \left(H^2 k^2+3\right) k^2+9$ $k^2+3\right) \ U-3 \ gH \left(15 H^4 k^4+146 H^2 k^2+543\right) \ U-3 \ sqrt{3} gH \left(15 H^4 k^4+146 H^2 k^2+543\right) \ (30720 \ sqrt{gH})$ $\label{left(H^2 k^2+3\wedge ight)^{5/2}} + \frac{i k^6 \left(128 \left(13 \right) + f(31 \right) \left(13 \right) \left(13 \right) + \frac{i k^6 \left(128 \right) + f(31 \right) + f(31 \right) + \frac{i k^6 \left(128 \right) + f(31 \right) + f(31 \right) + \frac{i k^6 \left(128 \right) + f(31 \right) + f(31 \right) + \frac{i k^6 \left(128 \right) + f(31 \right) + f(31 \right) + \frac{i k^6 \left(128 \right) + f(31 \right) + f($ k^6+279 \sqrt{g H^9 \left(H^2 k^2+3\right)} U^2 k^4+27 \left(31 \sqrt{g H^5 \left(H^2 k^2+3\right)} $U^2+7 \sqrt{g^3 H^7 \left(H^2 k^2+3\right)} h^2 \left(H^2 k^2+3\right)$ $U^2\right] = U^2\right] = U^2_1 = U^2_$ k^2+3\right)\right) k^4+45735 \sqrt{3} H^2 U k^2+51039 \sqrt{3} U-18432 \sqrt{g H \left(H^2 \sqrt{3} g^2 \left(775 H^4 k^4+6258 H^2 k^2+12999\right) H^2+g U \left(20551 \sqrt{3} H^6 U k^6-3 $\left(12288 \right) + 4 U = H^9 \left(H^2 k^2 + 3 \right) - 65021 \right) + 4 U = h^4 U = h^9 \left(H^2 k^2 + 3 \right) + 4 U = h^4 U = h^4$ $\$ \\sqrt{g H^{13} \\left(H^2 k^2+3\right)} U^3 k^6+774 \\sqrt{g H^9 \\left(H^2 k^2+3\right)} U^3 k^4+9 $k^2+3\right/^{7/2}}-\frac{k^8\left(U^3\right)\left(U^3\right)\left(U^3\right)}{k^2+3\right/^{7/2}}-\frac{k^2+3\right/^{7/2}}-\frac{k^2+3\right/^{7/2}}{k^2+3\right/^{7/2}}$ \sqrt{3} g H^9\right) k^8-3 U \left(9181 \sqrt{3} g^2 H^8+4 g U \left(21787 \sqrt{3} U-5312 \sqrt{g} $H \left(\frac{H^2 k^2+3\right)}{h^2 + 3 \cdot (H^2 k^2+3 \cdot$ $\label{left} $\left(-31231 \right) - 1231 \right] - 1231 \left(-31231 \right) - 1231 \right] - 1231 \right) - 1231 \right] - 1231 \right]$ $U + \frac{1}{3} \left(\frac{4}{3} \right) U + \frac{4}{3} \left(\frac{62 \left(\frac{62 \left(\frac{4}{3} \right)}{13} \right) U^4 + \frac{6}{3} \left(\frac{6}{3} \right) U^4 + \frac{6}{3} \left(\frac{6}{3} \right) U^4 + \frac{6}{3} \left(\frac{6}{3} \right) U + \frac{6}{3}$ k^2+3\right)\right)\right) k^4+27 \left(-35319 \sqrt{3} g^2 U H^4-91580 \sqrt{3} g U^3 H^3+64 \left(486 \sqrt{g H^5 \left(H^2 k^2+3\right)} U^4+1155 \sqrt{g^3 H^7 \left(H^2 k^2+3\right)} U^2+59 $U^4+g H \left(8832 \right) + U^2-4423 + U^2 U \cdot U^2-4423 \cdot U^2 U \cdot U^2$ $H^2 U + 832 \left(\frac{6^5 H^5 \left(H^2 k^2 + 3\right)}{10^3 H^2 U + 832 \left(H^2 k^2 + 3\right)} \right) \left(\frac{4}{3} \right) \left($ $k^2+3\left(\frac{4^2 k^2+3\right)^{9/2}}-\frac{k^9 \left(\frac{4^9 \left(\frac{4^9 k^2+3\right)^{9/2}}{k^2+3\right)^{9/2}}}{k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}{k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}} - \frac{k^2 k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}{k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}} - \frac{k^2 k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}{k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}} - \frac{k^2 k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}{k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}{k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}} - \frac{k^2 k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}{k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}{k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}} - \frac{k^2 k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}{k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}{k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}{k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}} - \frac{k^2 k^2+3\left(\frac{4^9 k^2+3}{k^2+3}\right)^{9/2}}{k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}{k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}} - \frac{k^2 k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}{k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}} - \frac{k^2 k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}{k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}} - \frac{k^2 k^2+3\left(\frac{4^9 k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}}{k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}}} - \frac{k^2 k^2+3\left(\frac{4^9 k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}}{k^2+3\left(\frac{4^9 k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}}{k^2+3\left(\frac{4^9 k^2+3\left(\frac{4^9 k^2+3\right)^{9/2}}}{k^2+3\left$ U = U - 111559 + U - 11559 $k^8-3 U \left(45573 \right) q^2 H^8+g U \left(456644 \right) U-108089 \left(45646 \right) U-108089$

K^2+3\right)\right) H^\-169472 \sqrt{g H^\{13} \left(H^2 K^2+3\right)} U^3\right) K^6+9 \left(-153703 \sqrt{3} g^2 U H^6+g U^2 \left(347651 \sqrt{g H \left(H^2 k^2+3\right)}-700818 \sqrt{3} U\right) $H^5 + 254208 \left(H^2 k^2 + 3\right) U^4 + 7035 \left(H^2 k^2 + 3\right) \left(H^2 k^2 + 3$ $k^4+27 \left(172047 \right) g^2 U H^4-477940 \right] g U^3 H^3+169472 \left(172047 \right) k^4+27 \left(172047 \right) g U^3 H^3+169472 \right)$ $\label{left} $$k^2+3\right) \ k^2+81 \left(42368 \right) \ H \left(42368 \right) \ U^4+g \ H \left(132513 \right) \ U^4+g \ H \left(132513 \right) \ U^4+g \ H^2 \ U^4+g \ U^4+g$ $\left(\frac{H^2 k^2 + 1}{1000} \right) - 122207 \right) U\right) U^2 - 63917 \right]$ $\left(\frac{g^5 H^5 \left(H^2 k^2+3\right)}\right)\right)\right) \$

Out[261]=

$$\begin{aligned} & \text{Out} \text{[[262]=} \quad \text{EA II} \quad \Big\{ \Big\{ 1 \, + \, \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dx} \, w} \right) \, \text{H}^2 \, \text{k}^3 \, \text{U} \, \text{Csc} \Big[\frac{\text{dx} \, k}{2} \Big]}{(6 + 2 \, \text{H}^2 \, \text{k}^2) \, \text{w}}, \quad \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, \text{H} \, k \, \text{Csc} \Big[\frac{\text{dx} \, k}{2} \Big]}{2 \left(\text{H} + \frac{\text{H}^3 \, k^2}{3} \right) \, \text{w}} \Big\}, \\ & \quad \Big\{ \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, k \, \left(g \, \text{H} \, \left(3 + \text{H}^2 \, \, k^2 \right) - 3 \, \text{U}^2 \right) \, \text{Csc} \Big[\frac{\text{dx} \, k}{2} \Big]}{2} \Big\}, \\ & \quad \Big\{ \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, k \, \left(g \, \text{H} \, \left(3 + \text{H}^2 \, \, k^2 \right) - 3 \, \text{U}^2 \right) \, \text{Csc} \Big[\frac{\text{dx} \, k}{2} \Big]}{2} \Big\}, \\ & \quad \Big\{ \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, k \, \left(g \, \text{H} \, \left(3 + \text{H}^2 \, \, k^2 \right) - 3 \, \text{U}^2 \right) \, \text{Csc} \Big[\frac{\text{dx} \, k}{2} \Big]}{2} \Big\}, \\ & \quad \Big\{ \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, k \, \left(g \, \text{H} \, \left(3 + \text{H}^2 \, \, k^2 \right) - 3 \, \text{U}^2 \right) \, \text{Csc} \Big[\frac{\text{dx} \, k}{2} \Big]}{2} \Big\}, \\ & \quad \Big\{ \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, k \, \left(g \, \text{H} \, \left(3 + \text{H}^2 \, \, k^2 \right) - 3 \, \text{U}^2 \right) \, \text{Csc} \Big[\frac{\text{dx} \, k}{2} \Big]}{2} \Big\}, \\ & \quad \Big\{ \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, k \, \left(g \, \text{H} \, \left(3 + \text{H}^2 \, \, k^2 \right) - 3 \, \text{U}^2 \right) \, \text{Csc} \Big[\frac{\text{dx} \, k}{2} \Big]}{2} \Big\}, \\ & \quad \Big\{ \frac{i \, e^{\frac{i \, \text{dx} \, k}{2}} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dt} \, w} \right) \, k \, \left(g \, \text{H} \, \left(3 + \text{H}^2 \, \, k^2 \right) - 3 \, \text{U}^2 \right) \, \text{Csc} \Big[\frac{\text{dx} \, k}{2} \Big]}{2} \Big\}, \\ & \quad \Big\{ \frac{i \, e^{\frac{i \, \text{dx} \, k}}{2} \left(1 - e^{-i \, \text{dx} \, k} \right) \left(-1 + e^{i \, \text{dx} \, w} \right) \, k \, \left(g \, \text{H} \, \left(3 + \text{H}^2 \, \, k^2 \right) - 3 \, \text{U}^2 \right) \, \text{Csc} \Big[\frac{\text{dx} \, k}{2} \right] \, + \frac{i \, e^{-i \, \text{dx} \, k}}{2} \, \left(1 - e^{-i \, \text{dx} \, k} \right) \left($$

Out[263]= EA || \left(

\begin{array}{cc}

 $w \rightarrow H^2 U \csc \left(\frac{dx}{k}{2} \right) \\ k^3 \left(H^2 K^2 + 6 \right) \\ w + 1$ & $\frac{i e^{\int \frac{1-e^{i \cdot k}}{1-e^{i \cdot k}}} \left(1-e^{-i \cdot k} \right) \left(1-e^{i \cdot k}$ $w \rightarrow H \ k \ k^2 \rightarrow H^3 (3) + H \ w \rightarrow W \ k^2 \rightarrow H^3 (3) + H \ w \rightarrow W \ k^2 \rightarrow H^3 (3) + H \ w \rightarrow W \ k^2 \rightarrow H^3 (3) + H \ w \rightarrow W \ k^2 \rightarrow H^3 (3) + H \ w \rightarrow W \ k^2 \rightarrow H^3 (3) + H \ w \rightarrow W \ k^2 \rightarrow H^3 (3) + H \ w \rightarrow W \ k^2 \rightarrow H^3 (3) + H \ w \rightarrow W \ k^2 \rightarrow H^3 (3) + H \ w \rightarrow W \ k^2 \rightarrow H^3 (3) + H \ w \rightarrow W \ k^2 \rightarrow H^3 (3) + H \ w \rightarrow W \ k^2 \rightarrow H^3 (3) + H \ w \rightarrow W \ k^2 \rightarrow H^3 (3) + H \ w \rightarrow W \ k^2 \rightarrow H^3 (3) + H \ w \rightarrow W \ k^2 \rightarrow H^3 (3) + H \ w \rightarrow W \ k^2 \rightarrow H^3 (3) + H \ w \rightarrow W \ k^2 \rightarrow H^3 (3) + H \ w \rightarrow W \ k^2 \rightarrow H^3 (3) + H \ w \rightarrow H$ $\label{eq:linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_linear_line$ $\left(H^2 k^2+3\right) -3 U^2\right) \c \left(H^2 k^2+3\right) \c \left(H^2 k^2+6\right) \c \left(H^2 k^2+3\right) \c \left(H^2 k^2+6\right) \c \left(H^2 k^2+3\right) \c \left(H^2 k^2+3\right$ $w\} \& \frac{i e^{\frac{i \cdot k}{2}} \left(1 - e^{-i \cdot k} k\right) \left($ $k \left(\frac{h^2 k^2+6\right)}{\left(\frac{h^$

\end{array}

\right)

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Out[265]= Eerr || \left(
                                                                                                        \begin{array}{cc}
                                                                                                             \left(\frac{1}{t} \left(\frac{U + \sqrt{4}}{t} \right) \right) k \right) k \right) 
                                                                                                                                                                                        k^2+3-\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot U - \frac{i \cdot \sqrt{3} \cdot H}{2} \right) k^2+3\frac{1}{2} \left(i \cdot
                                                                                                                                                                                         k^2+3\right\right)^2 \left( \frac{1}{6} \left( -i \ U \ k-\frac{1}{3} \right)^2 \left( \frac{1}{6} \right)^2 -\frac{1}{6} \left( -i \ U \ k-\frac{1}{3} \right)^2 \left( \frac{1}{6} \right)^2 -\frac{1}{6} \left( \frac{1}{6} \right)^2 -
                                                                                                                                                                                        k_{H^2 k^2+3}\right) \times \frac{dt}^3 -\frac{1}{24} \left(i \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g H \left(H^2 \cdot u \cdot h -\frac{1}{3} \cdot grt{g
                                                                                                                                                                                         k^2+3\right) k}{H^2 k^2+3}\right) + \frac{1}{2}
                                                                                                                                                                                        k^2 U \text{dt}+O\left(\text{dt}\^5\right)\right)\text{dx}+\left(\frac{i \left(2 H^4 k^7+9)}{}
                                                                                                                                                                                        H^2 k^5 \right) U \text{ } H^2 k^5 \right) U \text{ } H^2 k^5 \right) H^2 k^5 \right)
                                                                                                                                                                                        \text{dx}^2+\left(\frac{1}{24} \left(\frac{4t}{5}\right)\right)
                                                                                                                                                                                        \text{dx}^3+\text{left}(-\frac{1}{2} A^6 k^{11}+19 A^4 k^9+54 A^7 + 10 U \text{dt}} U \text{dt}
                                                                                                                                                                                        k^2+3\right)^3+O\left(text\left(dt\right)^5\right)\right) \text\left(dx\right)^4+O\left(text\left(dx\right)^5\right) \ \& \left(-\frac{3 i k}{2}\right)^2
                                                                                                                                                                                        \label{eq:linear_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_con
                                                                                                                                                                                        \label{left(frac{i H k U^2}{frac{k^2 H^3}{3}+H}-i g H k'right) text{dt}+O\left(text{dt}^5\right)+\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}\right)+O\left(text{dt}
                                                                                                                                                                                        g H k^2 \text{dt}+O\left(\frac{dt}+O\left(\frac{dt}{s}\right)\right) \cdot \left(\frac{dt}{s}\right)
                                                                                                                                                                                        U^2 k^5 - 18 U^2 k^3 + 18 g H k^3 \right) \left( \frac{12 \left( \frac{4}{12} \left( \frac{4}{12} \right)^2 + \frac{4}{12} \right)}{12 \left( \frac{4}{12} \left( \frac{4}{12} \right)^2 + \frac{4}{12} \right)} \right) \right) \left( \frac{4}{12} \left( \frac{4}{12} \right)^2 + \frac{4}{12} \left( \frac{4}{12} \right)^2 \right) \left( \frac{4}{12} \left( \frac{4}{12} \right)^2 + \frac{4}{12} \left( \frac{4}{12} \right)^2 \right) \left( \frac{4}{12} \left( \frac{4}{12} \right)^2 + \frac{4}{12} \left( \frac{4}{12} \right)^2 \right) \left( \frac{4}{12} \left( \frac{4}{12} \right)^2 + \frac{4}{12} \left( \frac{4}{12} \right)^2 \right) \left( \frac{4}{12} \left( \frac{4}{12} \right)^2 + \frac{4}{12} \left( \frac{4}{12} \right)^2 \right) \left( \frac{4}{12} \left( \frac{4}{12} \right)^2 + \frac{4}{12} \left( \frac{4}{12} \right)^2 \right) \left( \frac{4}{12} \left( \frac{4}{12} \right)^2 + \frac{4}{12} \left( \frac{4}{12} \right)^2 \right) \left( \frac{4}{12} \left( \frac{4}{12} \right)^2 + \frac{4}{12} \left( \frac{4}{12} \right)^2 \right) \left( \frac{4}{12} \left( \frac{4}{12} \right)^2 + \frac{4}{12} \left( \frac{4}{12} \right)^2 \right) \left( \frac{4}{12} \left( \frac{4}{12} \right)^2 + \frac{4}{12} \left( \frac{4}{12} \right)^2 \right) \left( \frac{4}{12} \left( \frac{4}{12} \right)^2 + \frac{4}{12} \left( \frac{4}{12} \right)^2 \right) \left( \frac{4}{12} \left( \frac{4}{12} \right)^2 + \frac{4}{12} \left( \frac{4}{12} \right)^2 \right) \left( \frac{4}{12} \left( \frac{4}{12} \right)^2 + \frac{4}{12} \left( \frac{4}{12} \right)^2 \right) \left( \frac{4}{12} \left( \frac{4}{12} \right)^2 + \frac{4}{12} \left( \frac{4}{12} \right)^2 \right) \left( \frac{4}{12} \left( \frac{4}{12} \right)^2 + \frac{4}{12} \left( \frac{4}{12} \right)^2 \right) \left( \frac{4}{12} \left( \frac{4}{12} \right)^2 + \frac{4}{12} \left( \frac{4}{12} \right)^2 \right) \left( \frac{4}{12} \left( \frac{4}{12} \right)^2 + \frac{4}{12} \left( \frac{4}{12} \right)^2 \right) \left( \frac{4}{12} \left( \frac{4}{12} \right)^2 + \frac{4}{12} \left( \frac{4}{12} \right)^2 \right) \left( \frac{4}{12} \left( \frac{4}{12
                                                                                                                                                                                        \label{left} $$ \operatorname{dx}^2+\operatorname{left}(-\frac{1}{24} \left( H k^4\right) \operatorname{kt}(dt)+O\left( \operatorname{dt}^5\right)\right) $$
                                                                                                                                                                                        \text{dx}^3+\left(-\frac{i \left(2 g H^7 k^{11}+18 g H^5 k^9+H^4 U^2 k^9+54 g H^3 k^7-54
                                                                                                                                                                                        U^2 k^5 + 54 g H k^5 \right) \left( \frac{dt}{240 \left( \frac{h^2 k^2 + 3 \right)}} + O\left( \frac{dt}{5} \right) \right) \right)
                                                                                                                                                                                        \t (\sqrt{dx}^4 + O\left(\frac{dx}^5\right) \cdot \left(\frac{dx}^5\right) \cdot \left(\frac{dx}^6\right) \cdot
                                                                                                                                                                                         U + \frac{dt}{H^2 k^2+3} - \frac{1}{2} \left( i \cdot \frac{3} \right) \left( i \cdot \frac{4}{1} \right) 
                                                                                                                                                                                        k_{H^2 k^2+3}\right)^2 \text{ } \left(1_{6} \left(1 U k-\frac{3} \right)^2 \right) 
                                                                                                                                                                                         k^2+3\right) k_{H^2 k^2+3}\right) s_{H^2 k^2+3}\right) s_{H^2 k^2+3}\right) + k_{H^2 k^2+3}\right) s_{H^2 k^2+3}\right) k_{H^2 k^2+3}\right) s_{H^2 k^2+3}\right) s
                                                                                                                                                                                        \left( H^2 k^2 + 3\right) + \left( H^2 k^2 
                                                                                                                                                                                        k^2 U \text{text}dt}+O\left(\frac{dt}{5}\right)\right) \text{text}dx}+\left(\frac{dt}{5}\right) \text{text}dx}+\left(\frac{dt}{5}\right)
                                                                                                                                                                                        k^5+36 k^3\right) U \text{ } (h^2 k^2+3\right) + O\left(\frac{dt}{5}\right) U \text{ } (h^2 k^2+3\right)
                                                                                                                                                                                        \text{dx}^2+\left(\frac{1}{24}\right) \cdot \left(\frac{4t}{-5\right)}
                                                                                                                                                                                        \text{text}\{dx\}^3 + \text{left}(-\frac{1}{2} A^6 k^{11} + 17 A^4 k^9 + 54 A^7 + 108 k^5 + 108 k^5 + 108 k^6 + 118 A^7 + 108 k^6 + 108 k^
                                                                                                                                                                                        \left(\frac{dt}^5 \right) \cdot \left(\frac{
                                                                                                        \end{array}
                                                                                                      \right)
```