In[2683]:=

```
Text[Row[{" dt error for all Fnn"}]]
```

$$FGGdt = -\frac{\left(k\left(6+H^2 k^2\right) U w\right) dt^2}{2\left(3+H^2 k^2\right)}$$

Out[2683]= dt error for all Fnn

Out[2684]= $$-\frac{dt^2\, k\left(6+H^2 k^2\right) U\, w}{2\left(3+H^2 k^2\right)}$$

In[2685]:=

```
Text[Row[{" -Sqrt[g*H] < U < Sqrt[g*H]   "}]]
```

$$FGG1FDdxdt = -\frac{1}{2}\left(\sqrt{g\,H}\,k^2\right) dt * dx$$

```
Text[Row[{" U > Sqrt[g*H]   "}]]
```

$$FGG1FDdxdt1 = -\frac{1}{2}\left(k^2\, U\right) dt\, dx$$

```
Text[Row[{" U< -Sqrt[g*H] "}]]
```

$$FGG1FDdxdt2 = \frac{1}{2} k^2\, U\, dt\, dx$$

Out[2685]= −Sqrt[g∗H] < U < Sqrt[g∗H]

Out[2686]= $$-\frac{1}{2}\, dt\, dx\, \sqrt{g\,H}\, k^2$$

Out[2687]= U > Sqrt[g∗H]

Out[2688]= $$-\frac{1}{2}\, dt\, dx\, k^2\, U$$

Out[2689]= U< −Sqrt[g∗H]

Out[2690]= $$\frac{1}{2}\, dt\, dx\, k^2\, U$$

In[2691]:=
```
Text[Row[{" -Sqrt[g*H] < U < Sqrt[g*H]  "}]]
```
$$FGG2FDdxdt = -\frac{i\left(-9k^3 + 3H^2k^5 + H^4k^7\right)U\,dt}{12\left(3 + H^2k^2\right)^2}\;dx\wedge 2$$
```
Text[Row[{" U > Sqrt[g*H]  "}]]
```
$$FGG2FDdxdt1 = -\frac{i\left(-9k^3 + 3H^2k^5 + H^4k^7\right)U\,dt}{12\left(3 + H^2k^2\right)^2}\;dx\wedge 2$$
```
Text[Row[{" U< -Sqrt[g*H] "}]]
```
$$FGG2FDdxdt2 = -\frac{i\left(-9k^3 + 3H^2k^5 + H^4k^7\right)U\,dt}{12\left(3 + H^2k^2\right)^2}\;dx\wedge 2$$

Out[2691]= −Sqrt[g*H] < U < Sqrt[g*H]

Out[2692]= $-\frac{i\,dt\,dx^2\left(-9k^3 + 3H^2k^5 + H^4k^7\right)U}{12\left(3 + H^2k^2\right)^2}$

Out[2693]= U > Sqrt[g*H]

Out[2694]= $-\frac{i\,dt\,dx^2\left(-9k^3 + 3H^2k^5 + H^4k^7\right)U}{12\left(3 + H^2k^2\right)^2}$

Out[2695]= U< −Sqrt[g*H]

Out[2696]= $-\frac{i\,dt\,dx^2\left(-9k^3 + 3H^2k^5 + H^4k^7\right)U}{12\left(3 + H^2k^2\right)^2}$

In[2697]:=

```
Text[Row[{" -Sqrt[g*H] < U < Sqrt[g*H]  "}]]
```

$$\text{FGG2FEMdxdt} = -\frac{i\left(126\,k^3 + 75\,H^2\,k^5 + 10\,H^4\,k^7\right)U\,dt}{120\left(3 + H^2\,k^2\right)^2}\;dx^{\wedge}2$$

```
Text[Row[{" U > Sqrt[g*H]  "}]]
```

$$\text{FGG2FEMdxdt1} = -\frac{i\left(126\,k^3 + 75\,H^2\,k^5 + 10\,H^4\,k^7\right)U\,dt}{120\left(3 + H^2\,k^2\right)^2}\;dx^{\wedge}2$$

```
Text[Row[{" U< -Sqrt[g*H] "}]]
```

$$\text{FGG2FEMdxdt2} = -\frac{i\left(126\,k^3 + 75\,H^2\,k^5 + 10\,H^4\,k^7\right)U\,dt}{120\left(3 + H^2\,k^2\right)^2}\;dx^{\wedge}2$$

Out[2697]= −Sqrt[g*H] < U < Sqrt[g*H]

Out[2698]= $$-\frac{i\,dt\,dx^2\left(126\,k^3 + 75\,H^2\,k^5 + 10\,H^4\,k^7\right)U}{120\left(3 + H^2\,k^2\right)^2}$$

Out[2699]= U > Sqrt[g*H]

Out[2700]= $$-\frac{i\,dt\,dx^2\left(126\,k^3 + 75\,H^2\,k^5 + 10\,H^4\,k^7\right)U}{120\left(3 + H^2\,k^2\right)^2}$$

Out[2701]= U< −Sqrt[g*H]

Out[2702]= $$-\frac{i\,dt\,dx^2\left(126\,k^3 + 75\,H^2\,k^5 + 10\,H^4\,k^7\right)U}{120\left(3 + H^2\,k^2\right)^2}$$

In[2703]:=

```
Text[Row[{" -Sqrt[g*H] < U < Sqrt[g*H]  "}]]
FGG3FDdxdt = -1/12 (Sqrt[g H] k^4) dt dx^3
Text[Row[{" U > Sqrt[g*H]  "}]]
FGG3FDdxdt1 = -1/12 (k^4 U) dt dx^3
Text[Row[{" U< -Sqrt[g*H] "}]]
FGG3FDdxdt2 = 1/12 k^4 U dt dx^3
```

Out[2703]= −Sqrt[g∗H] < U < Sqrt[g∗H]

Out[2704]= $-\frac{1}{12}\, dt\, dx^3 \sqrt{g\, H}\, k^4$

Out[2705]= U > Sqrt[g∗H]

Out[2706]= $-\frac{1}{12}\, dt\, dx^3\, k^4\, U$

Out[2707]= U< −Sqrt[g∗H]

Out[2708]= $\frac{1}{12}\, dt\, dx^3\, k^4\, U$