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[ assume(a1,Type::Real):
[ assume(a2,Type::Real):
[ assume(wO,Type::Real):
[ assume(wV,Type::Real):
[ assume(we,Type::Real):
[ l1:=wO+sqrt(-1)*wV^2/we

$$wO + \frac{wV^2 i}{we}$$

[ l2:=-wO+sqrt(-1)*wV^2/we

$$-wO + \frac{wV^2 i}{we}$$

[ assume(uhat0,Type::Real):
[ assume(A,Type::Real):
[ a1:=uhat0

$$uhat0$$

[ assume(nu,Type::Real):
[ assume(k,Type::Real):
[ a2:=0

$$0$$

[ A:=collect((a2-a1*l2)/(l1-l2),sqrt(-1))

$$\left(-\frac{uhat0 wV^2}{2 wO we}\right) i + \frac{uhat0}{2}$$

[ assume(t,Type::Real):
[ uQS1:=collect(A*exp(-wV^2*t/we)*(cos(wO*t)+sqrt(-1)*sin(wO*t)),sqrt(-1))

$$-\left(-\frac{uhat0 wV^2 \sigma_1 \sin(t wO)}{2 wO we}\right) + \left(\frac{uhat0 \sigma_1 \sin(t wO)}{2} - \frac{uhat0 wV^2 \sigma_1 \cos(t wO)}{2 wO we}\right) i + \frac{uhat0 \sigma_1 \cos(t wO)}{2}$$

where

$$\sigma_1 = e^{-\frac{t wV^2}{we}}$$

[ B:=collect(-(a2-a1*l1)/(l1-l2),sqrt(-1))

$$\frac{uhat0 wV^2}{2 wO we} i + \frac{uhat0}{2}$$

[ uQS2:=collect(B*exp(-wV^2*t/we)*(cos(wO*t)-sqrt(-1)*sin(wO*t)),sqrt(-1))

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$$-\left(-\frac{\text{uhat0 } wV^2 \sigma_1 \sin(t \text{ wO})}{2 \text{ wO } we}\right) + \left(\frac{\text{uhat0 } wV^2 \sigma_1 \cos(t \text{ wO})}{2 \text{ wO } we} - \frac{\text{uhat0 } \sigma_1 \sin(t \text{ wO})}{2}\right) i + \frac{\text{uhat0 } \sigma_1 \cos(t \text{ wO})}{2}$$

where

$$\sigma_1 = e^{-\frac{t \text{ wV}^2}{we}}$$

$$\text{uQS:=collect(uQS1+uQS2,sqrt(-1))}$$

$$\text{uhat0 } e^{-\frac{t \text{ wV}^2}{we}} \cos(t \text{ wO}) + \frac{\text{uhat0 } wV^2 e^{-\frac{t \text{ wV}^2}{we}} \sin(t \text{ wO})}{\text{wO } we}$$

$$\text{wtau:=Va}^2 \text{ kz}^2 / (\text{eta} \text{ k}^2)$$

$$\frac{\text{Va}^2 \text{ kz}^2}{\text{eta } k^2}$$

$$\text{wO:=2*Omg*kz/k}$$

$$\frac{2 \text{ Omg } \text{ kz}}{k}$$

$$\text{wtau/wO}$$

$$\frac{\text{Va}^2 \text{ kz}}{2 \text{ Omg } \text{ eta } k}$$