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Exit[];

PrependTo[$Path, "D:\\Users\\Johannes\\Promotion\\Mathematica\\Packages"]; << JoFin`

a =.

a[i_] := 0; St[1] = P; St[2] = S; b[1, 1] = s P q; b[2, 1] = s S; b[i_, 2] := 0;
FK[V, St, a, b, 2]


$$\frac{1}{2} \left( s^2 S^2 V^{(0,0,2)}[t, P, S] + 2 P q s^2 S V^{(0,1,1)}[t, P, S] + P^2 q^2 s^2 V^{(0,2,0)}[t, P, S] \right) +$$


$$V^{(1,0,0)}[t, P, S]$$



$$r (-q + x) V^{(0,1)}[t, x[1]] + \frac{1}{2} s^2 (q - x)^2 V^{(0,2)}[t, x[1]] /. q \rightarrow 1$$


Simplify  $\left[ r (-1 + x) V^{(0,1)}[t, x[1]] + \frac{1}{2} s^2 (1 - x)^2 V^{(0,2)}[t, x[1]] - \right.$ 

$$\left. \left( r (1 + x) V^{(0,1)}[t, x[1]] + \frac{1}{2} s^2 (-1 - x)^2 V^{(0,2)}[t, x[1]] \right) \right]$$


$$- 2 \left( r V^{(0,1)}[t, x[1]] + s^2 x V^{(0,2)}[t, x[1]] \right)$$


P[1] = S; kt[1] = r S; kX[1, 1] = σ S;
P[2] = a; kt[2] = r a; kX[2, 1] = q S σ;
kX[i_, 2] := 0;
Expand[DFK[V, P, kt, kX, 2, r]]


$$-r V[t, S, a] + a r V^{(0,0,1)}[t, S, a] + \frac{1}{2} q^2 S^2 \sigma^2 V^{(0,0,2)}[t, S, a] + r S V^{(0,1,0)}[t, S, a] +$$


$$q S^2 \sigma^2 V^{(0,1,1)}[t, S, a] + \frac{1}{2} S^2 \sigma^2 V^{(0,2,0)}[t, S, a] + V^{(1,0,0)}[t, S, a]$$


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