In[2]:= `a[phi0_, p_, rbar_, f_, b_] = (p + b (2 phi0 - b f)) / (b f (2 - b rbar) - phi0)`

Out[2]= $\frac{p + b\ (-b\ f + 2\ phi0)}{-phi0 + b\ f\ (2 - b\ rbar)}$

In[3]:= `D[a[phi0, p, rbar, f, b], phi0]`

Out[3]= $\frac{p + b\ (-b\ f + 2\ phi0)}{(-phi0 + b\ f\ (2 - b\ rbar))^2} + \frac{2\ b}{-phi0 + b\ f\ (2 - b\ rbar)}$

In[16]:= Simplify[D[a[phi0, p, rbar, f, b], phi0] == $\frac{3\ b^2\ f + p - 2\ b^3\ f\ rbar}{\left(-2\ b\ f + phi0 + b^2\ f\ rbar\right)^2}$]

Out[16]= True

In[6]:= `Simplify[D[a[phi0, p, rbar, f, b], p] == 1 / (b f (2 - b rbar) - phi0)]`

Out[6]= True

In[13]:= Simplify[
D[a[phi0, p, rbar, f, b], rbar] == $\left(b^2\ f\ \left(-b^2\ f + p + 2\ b\ phi0\right)\right) \Big/ \left(-2\ b\ f + phi0 + b^2\ f\ rbar\right)^2$]

Out[13]= True

In[14]:= Simplify[D[a[phi0, p, rbar, f, b], f] == b $\frac{(p\ (-2 + b\ rbar) + b\ phi0\ (-3 + 2\ b\ rbar))}{\left(-2\ b\ f + phi0 + b^2\ f\ rbar\right)^2}$]

Out[14]= True

In[15]:= Simplify[
D[a[phi0, p, rbar, f, b], b] == -2 $\frac{\left(f\ p + phi0^2 - b\ f\ (phi0 + p\ rbar) + b^2\ f\ (f - phi0\ rbar)\right)}{\left(-2\ b\ f + phi0 + b^2\ f\ rbar\right)^2}$]

Out[15]= True