This is a check (up to the 7th derivative) that shows that the massive field wipes out the odd derivatives that contribute to the Euler-Maclaurin sum used to calculate the magnitude of the Casimir effect.

```
$Assumptions = b > 0;
ClearAll[fp, fpp]
fp = -2 n Sqrt[n^2 + b^2] f[ (Pi / a) Sqrt[ n^2 + b^2]]
fpp = D[fp, n]
f3p = D[fpp, n]
```

Out[307]= $-2\,n\,\sqrt{b^2+n^2}\;f\left[\frac{\sqrt{b^2+n^2}\;\pi}{a}\right]$

Out[308]= $-\frac{2\,n^2\,f\left[\frac{\sqrt{b^2+n^2}\;\pi}{a}\right]}{\sqrt{b^2+n^2}}-2\,\sqrt{b^2+n^2}\;f\left[\frac{\sqrt{b^2+n^2}\;\pi}{a}\right]-\frac{2\,n^2\,\pi\,f'\left[\frac{\sqrt{b^2+n^2}\;\pi}{a}\right]}{a}$

Out[309]= $\frac{2\,n^3\,f\left[\frac{\sqrt{b^2+n^2}\;\pi}{a}\right]}{\left(b^2+n^2\right)^{3/2}}-\frac{6\,n\,f\left[\frac{\sqrt{b^2+n^2}\;\pi}{a}\right]}{\sqrt{b^2+n^2}}-\frac{6\,n\,\pi\,f'\left[\frac{\sqrt{b^2+n^2}\;\pi}{a}\right]}{a}-\frac{2\,n^3\,\pi\,f'\left[\frac{\sqrt{b^2+n^2}\;\pi}{a}\right]}{a\,\left(b^2+n^2\right)}-\frac{2\,n^3\,\pi^2\,f''\left[\frac{\sqrt{b^2+n^2}\;\pi}{a}\right]}{a^2\,\sqrt{b^2+n^2}}$

```
In[321]:= f4p = D[f3p, n];
f5p = D[f4p, n];
f6p = D[f5p, n];
f7p = D[f6p, n];

fp /. n → 0
fpp /. n → 0 // Simplify
f3p /. n → 0
f4p /. n → 0 // Simplify
f5p /. n → 0
f6p /. n → 0 // Simplify
f7p /. n → 0
```

Out[325]= 0

Out[326]= $-2\,b\,f\left[\frac{b\,\pi}{a}\right]$

Out[327]= 0

Out[328]= $-\frac{6\,f\left[\frac{b\,\pi}{a}\right]}{b}-\frac{6\,\pi\,f'\left[\frac{b\,\pi}{a}\right]}{a}$

Out[329]= 0

Out[330]= $\frac{30\left(a^2\,f\left[\frac{b\,\pi}{a}\right]-b\,\pi\left(a\,f'\left[\frac{b\,\pi}{a}\right]+b\,\pi\,f''\left[\frac{b\,\pi}{a}\right]\right)\right)}{a^2\,b^3}$

Out[331]= 0