$$f(t)=t*\cosh^2(2*t)*e^{(2t)}$$

$$F(s)=\int t*\cosh^2(2*t)*e^{(2t)}*e^{(-s*t)}\,dt$$

$$f(t)=t*\cosh^2(2t)*e^{2t}=t\left(\frac{(e^{2t}+e^{-2t})}{2}\right)^2=(\ldots)=\frac{1}{4}*(\underbrace{(t*e^{6t})}_{(\frac{1}{(s-6)^2})}+\underbrace{(t*e^{2t})}_{(\frac{1}{(s-2)^2})}+\underbrace{(t*e^{-2t})}_{(\frac{1}{(s+2)^2})})$$

$$F(s)=\frac{1}{4}*\left(\frac{1}{(s-6)^2}+\frac{1}{(s-2)^2}+\frac{1}{(s+2)^2}\right)$$