I Show that $\mathcal{L}f(ct) = \frac{1}{c}F(\frac{s}{c})$

Definition 1 (Laplace Transform)**.** $F(s) = \mathcal{L}f(t), s > a \geq 0 \ s > ca$

$$\mathcal{L}f(ct) = \int_0^\infty e^{-st} f(ct)\mathrm{d}t$$

$$u = ct, \frac{u}{c} = t$$
$$\frac{\mathrm{d}u}{\mathrm{d}t} = c$$
$$\frac{1}{c}\mathrm{d}u = \mathrm{d}t$$

$$\mathcal{L}f(ct) = \frac{1}{c}\int_0^\infty e^{-\frac{su}{c}} f(u)\mathrm{d}u$$

$$t = u$$
$$dt = du$$

$$\mathcal{L}f(ct) = \frac{1}{c}F(\frac{s}{c})$$