

Drop & Drag

Multiplication by t^n

Find Laplace transform for $L\{2te^{5t}\}$
by using the multiplication by t^n theorem:

1

$$L\{2te^{5t}\} = (-1)^1 \frac{d^1}{ds^1} \left[\frac{2}{s-5} \right]$$

$$2e^{5t}$$

$$L\{2e^{5t}\} = 2 \left\{ \frac{1}{s-5} \right\}$$

SOLUTION:

STEP 1:

$$f(t) =$$

$$, \quad n =$$

STEP 2:

$$\therefore F(s) = \frac{2}{s-5}$$

STEP 3:

$$= (-1) \frac{d}{ds} [2(s-5)^{-1}]$$

$$= (-1) [(-1)2(s-5)^{-2}(1)]$$

$$= 2(s-5)^{-2}$$

$$= \frac{2}{(s-5)^2}$$

