

Name: _____

1. [4 parts, 1.5 points each] Compute the following.

(a) $\mathcal{L}\{2te^{3t}\}$

(b) $\mathcal{L}\{2\sinh(5t) + 3t^4\}$

(c) $\mathcal{L}^{-1}\left\{\frac{1}{(s-5)^3}\right\}$

(d) $\mathcal{L}^{-1}\left\{\frac{2s-1}{s^2+6s+13}\right\}$

2. [1 point] Complete the definition: $\mathcal{L}\{f(t)\} =$ _____.
3. [3 points] Use the Laplace transform to solve $y'' - 4y' + 5y = 1$ with $y(0) = 1$ and $y'(0) = -1$.