

Laplace Transforms

Find the Laplace transform of each of the following.

1. $f(t) = 6t^4 + 4e^{15t} - 3t^{\frac{7}{2}}$

2. $h(t) = 6\cos\left(\frac{t}{7}\right) + 4\cosh(7t)$

3. $g(t) = \sin(2t) - 13e^{-8t}\sin(2t)$

4. $h(t) = 4t\sin(9t) + \cos(1-7t)$

Inverse Laplace Transforms

Find the inverse Laplace transforms of each of the following.

5. $G(s) = \frac{4-s}{3s^2-3s+5}$

6. $F(s) = \frac{3+s}{(s+1)(s-7)(4s-3)}$

7. $G(s) = \frac{1-s^2}{s^3(s+2)}$

8. $H(s) = \frac{4s+7}{(s^2+4)(s^2+6s+4)}$

9. $F(s) = \frac{8}{(s-3)(s^2+9)^2}$