Laplace Transforms

Find the Laplace transform of the given function.

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

2. $h(t) = \mathbf{e}^{-14t} - 10\mathbf{e}^{-9t}\cos(2t) - 7\sinh(2t)$

3. $g(t) = t^2\,\mathbf{e}^{-t} - 8\cos\left(\frac{2t}{5}\right) - 3\sin\left(\frac{2t}{5}\right)$

4. $h(t) = 3t\cos(2t) + 8\sin(1-6t)$

Inverse Laplace Transforms

Find the inverse transform of each of the following.

5. $F(s) = \dfrac{7-8s}{2s^2-3s+1}$

6. $G(s) = \dfrac{9+7s}{s(s+2)(3s-4)}$

7. $H(s) = \dfrac{9s}{(s-2)(s^2+8)}$

8. $H(s) = \dfrac{s^2+8}{s^2(s^2+8s+22)}$

9. $F(s) = \dfrac{10s^2}{(s-1)(s^2+4)^2}$