

**MAT 2384-Practice Problems on  
Inverse Laplace Transforms-**

Find the Inverse Laplace transform of each of the following functions.

1.  $\frac{2s+3}{s^2+9}$
2.  $\frac{2s+1}{s^2-7s+6}$
3.  $\frac{s}{s^2+6s-7}e^{-3s}$
4.  $\frac{3}{s}(e^{-2s} - e^{-4s})$
5.  $\frac{2s+1}{s^2+2s+1}$
6.  $\frac{2s+3}{s^2}e^{-3s} - \frac{3s+2}{s^2}e^{-2s}$
7.  $\frac{2}{s^2+4}e^{-\frac{\pi s}{2}}$
8.  $\frac{1}{(s-1)^2}e^{-2s}$
9.  $\frac{1}{s^2+8s+25}$
10.  $\frac{100(s+25)}{s(s+5)^3}$
11.  $\frac{1}{s(s^2+9)}$  (Use convolution)
12.  $\frac{1}{s^2(s-1)}$  (Use convolution)
13.  $\frac{e^{-2s}}{s(s-1)}$  (Use convolution)
14.  $\frac{1}{(s-1)^2}$  (Use convolution)
15.  $\frac{w}{s^2(s^2+w^2)}$  (Use convolution)
16.  $\frac{s}{(s^2+\pi^2)^2}$
17.  $\frac{6s^2-2}{(s^2+1)^3}$
18.  $\frac{e^{-2s}}{(s-1)^3}$
19.  $\frac{3(1-e^{-\pi s})}{(s^2+9)}$
20.  $\frac{se^{-2s}}{(s^2+\pi^2)}$
21.  $\frac{2s+6}{(s^2+6s+10)^2}$
22.  $\frac{s^2}{(s^2+4)^2}$
23.  $\ln \frac{s+2}{s-3}$
24.  $\frac{s^2-\pi^2}{(s^2+\pi^2)^2}$
25.  $\frac{1}{s^3+s^5}$  (Use the transform of an Integral Formula)
26.  $\frac{1}{s^2} \left( \frac{s-1}{s+1} \right)$  (Use the transform of an Integral Formula)
27.  $\frac{9}{s^2} \left( \frac{s+1}{s^2+9} \right)$  (Use the transform of an Integral Formula)