Quiz 2.22

In[9]:=
```
dist = HypoexponentialDistribution[{μ1, μ2}];
Ftilde[s_] = MomentGeneratingFunction[dist, -s]
mtilde[s_] = Ftilde[s] / (1 - Ftilde[s])
FullSimplify[InverseLaplaceTransform[mtilde[s] / s, s, t]]
```

Out[10]= $$\frac{\mu_1\,\mu_2}{(s+\mu_1)\,(s+\mu_2)}$$

Out[11]= $$\frac{\mu_1\,\mu_2}{(s+\mu_1)\,(s+\mu_2)\,\left(1-\frac{\mu_1\,\mu_2}{(s+\mu_1)\,(s+\mu_2)}\right)}$$

Out[12]= $$\frac{\mu_1\,\mu_2\,\left(-1+e^{-t\,(\mu_1+\mu_2)}+t\,(\mu_1+\mu_2)\right)}{(\mu_1+\mu_2)^2}$$

In[13]:=
```
dist = HyperexponentialDistribution[{p, 1 - p}, {μ1, μ2}];
Ftilde[s_] = MomentGeneratingFunction[dist, -s]
mtilde[s_] = Ftilde[s] / (1 - Ftilde[s])
FullSimplify[InverseLaplaceTransform[mtilde[s] / s, s, t]]
```

Out[14]= $$\frac{p\,\mu_1}{s+\mu_1}+\frac{(1-p)\,\mu_2}{s+\mu_2}$$

Out[15]= $$\frac{\frac{p\,\mu_1}{s+\mu_1}+\frac{(1-p)\,\mu_2}{s+\mu_2}}{1-\frac{p\,\mu_1}{s+\mu_1}-\frac{(1-p)\,\mu_2}{s+\mu_2}}$$

Out[16]= $$\frac{1}{((-1+p)\,\mu_1-p\,\mu_2)^2}\,e^{(-1+p)\,t\,\mu_1-p\,t\,\mu_2}\,\Big((-1+p)\,p\,(\mu_1-\mu_2)^2+e^{t\,(-(-1+p)\,\mu_1+p\,\mu_2)}\,\big(-(-1+p)\,p\,\mu_2^2-(-1+p)\,\mu_1^2\,(p+t\,\mu_2)+p\,\mu_1\,\mu_2\,(-2+2\,p+t\,\mu_2)\big)\Big)$$