

Exercise 1.51 (* Mathematica 7.0.0 *)

■ (b) Calculating $P[N(1) < 5 \mid N(0.5) > 2]$

Denominator: $P[N(0.5) > 2] =$

```
1 - CDF[PoissonDistribution[2.5], 2]
```

0.456187

Numerator: $P[N(0.5) > 2, N(1) < 5] =$

```
PDF[PoissonDistribution[2.5], 3] * CDF[PoissonDistribution[2.5], 1] +  
PDF[PoissonDistribution[2.5], 4] * CDF[PoissonDistribution[2.5], 0]
```

0.0723803

$P[N(1) < 5 \mid N(0.5) > 2] =$

```
%  
—  
%%  
0.158664
```

■ (c) largest λ : $P[N(1) \geq 8] \leq 0.1$ or $P[N(1) \leq 7] \geq 0.9$

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FindRoot[CDF[PoissonDistribution[\lambda], 7] == 0.9, {\lambda, 0.001}]
```

$\{\lambda \rightarrow 4.65612\}$