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| **Course:**  | CS5961/6951 | *Computational Statistics* | Sp 2011 |
| **Instructor:** | R. F. Riesenfeld |  |  |
| **Date:** | 15 Mar 2011 |  |  |
| **Due:** | Fri, 18 Jan 2010 |  |  |
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| **Assignment:**  | *Normal Distribution* |  |

1. Suppose a certain demographic group ***G*** with age 51-61 years has *mean net worth* of μ= $60,000, with standard deviation σ = $20,000. Assuming a normal distribution pertains, compute the *percentage* (%) of ***G*** that would be expected to have *net worth* (***NW)*** such that :
2. $60,000 ≤ ***NW***  ≤ $100,000
3. $40,000 ≤ ***NW***  ≤ $120,000
4. $20,000 ≤ ***NW***  ≤ $140,000

When solving this problem, transform the data into the standard normal **z** statistic. For each range i), ii) and iii) above, recast the problem in terms of **z** relative to the parameters of the standard normal distribution. That is, what ranges of **z** correspond to above queries i), ii) and iii), respectively? Let the normal probability density function be , and be the cumulative normal distribution function.

1. ? ≤ **z**  ≤ ?
2. ? ≤ **z**  ≤ ?
3. ? ≤ **z**  ≤ ?

In writing up the answer, use some standard tool (*Excel, R*, etc) to evaluate the normal probability density function , and , the cumulative normal distribution function. Show details.