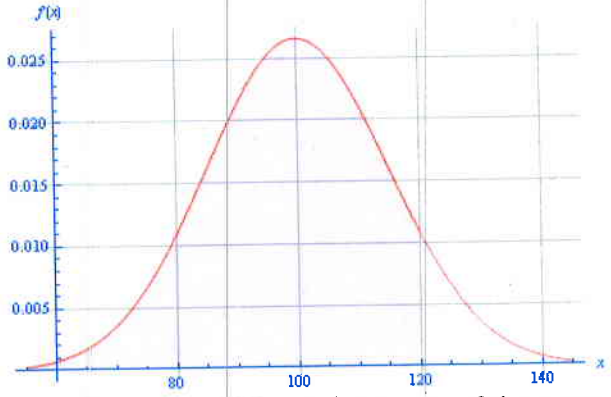
Stat 1350, Normal Distribution Activity, Fall 2014 Name KEY

Instructions: Find the percent of area under the curve represented by the graphs.

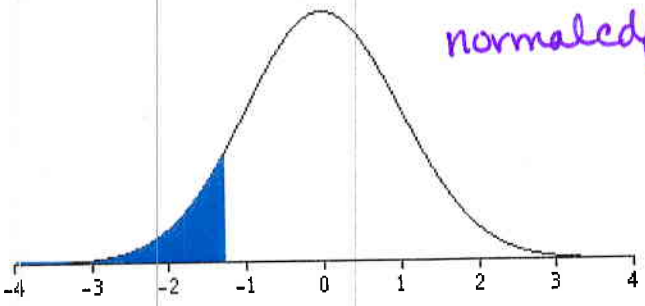
1. Find the shaded area with a mean of 100, and a standard deviation of 15.



normalcdf(-E99, 120, 100, 15)

= .9087887181...

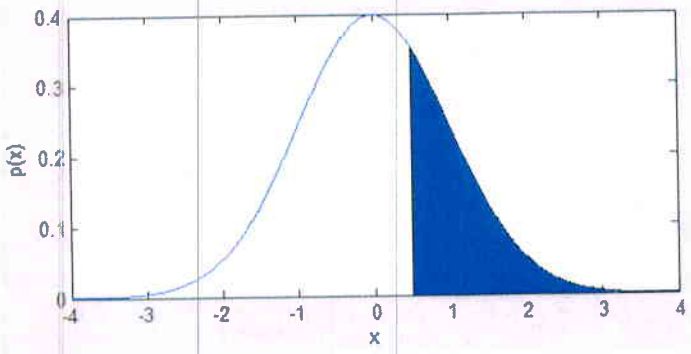
2. Find the shaded area under the curve if the mean is 0 and the standard deviation is 1. The cut-off score here is $z = -1.28$.



normalcdf(-E99, -1.28, 0, 1) =

.1002726...

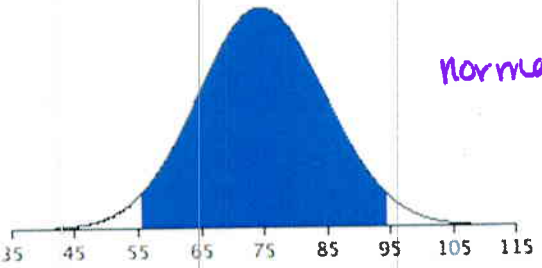
3. Find the shaded area under the curve for the cut-off value $z = 0.5$.



normalcdf(.5, E99, 0, 1) =

.308537...

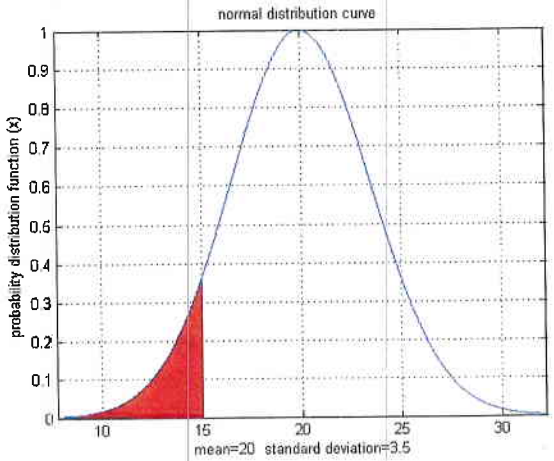
4. Find the shaded area under the curve for the cut-off values $x = 56, x = 94$ for the mean of the distribution at 75, and a standard deviation of 10.



normalcdf(56, 94, 75, 10) =

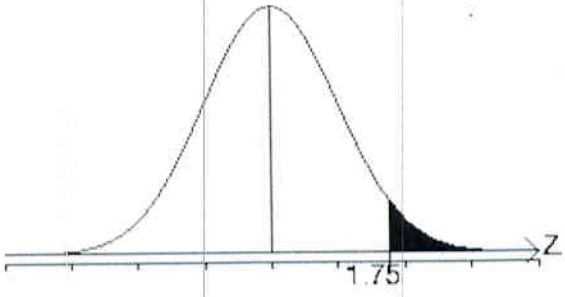
.942567

5.



normalcdf(-E99, 15, 20, 3.5) =

= .07656...

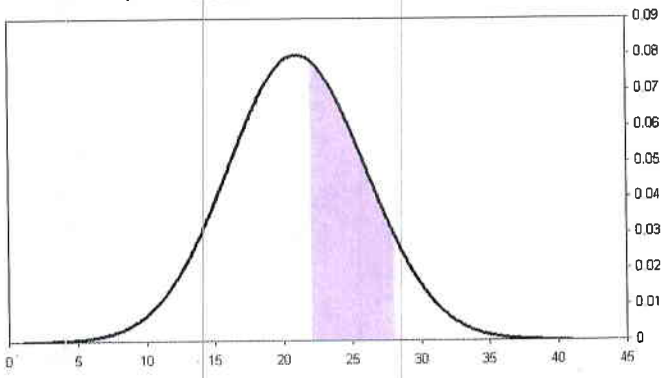


normalcdf(1.75, E99, 0, 1) =

.040059...

6. -4 -3 -2 -1 0 1 2 3 4 , with mean 0 and standard deviation of 1.

7. Mean is 21, and standard deviation is 5. The cut-off values are 22 and 28.

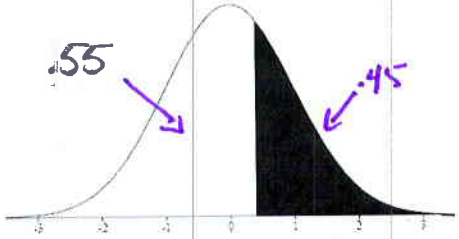


normalcdf(22, 28, 21, 5) =

.339983...

Instructions: For each of the problems below, the percentage under the curve is indicated. Find the z or x cut-off values for the region given the mean and the specified standard deviation.

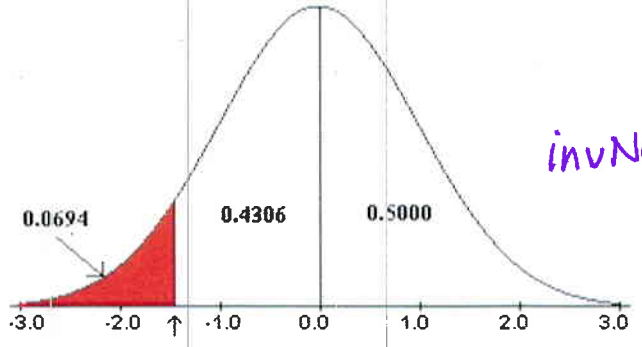
8. The area under the curve is 45%. With mean of 0 and the standard deviation is 1.



1 - .45 = .55

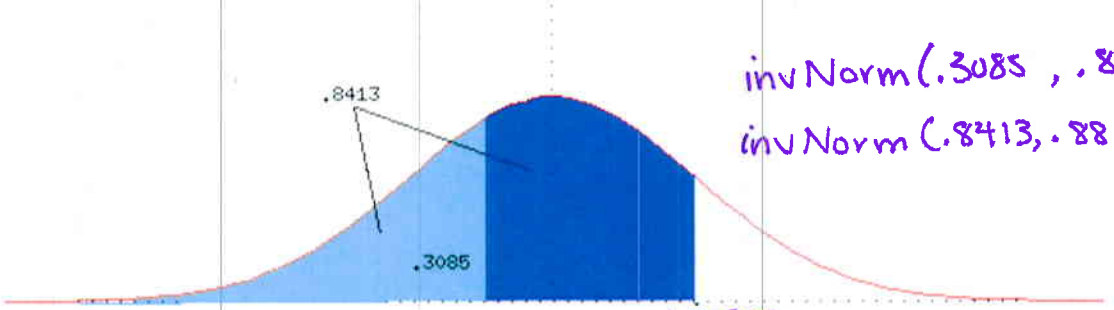
invNorm(.55, 0, 1) = .12566...

9.



invNorm(.0694, 0, 1) = -1.48...

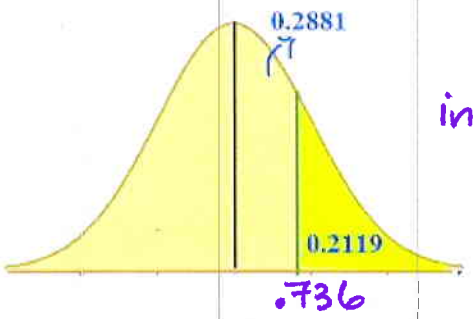
10. Assume the mean is 0.88, and the standard deviation is 0.15.



invNorm(.3085, .88, .15) = .804...

invNorm(.8413, .88, .15) = 1.029...

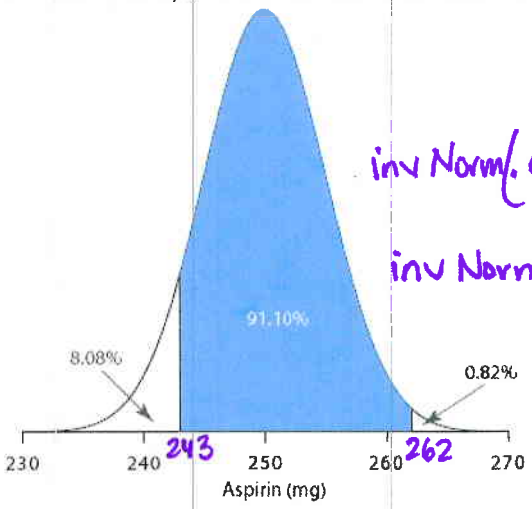
11. Assume the mean is 0.72 and the standard deviation is 0.02.



1 - .2119 = .7881

invNorm(.7881, .72, .02) = .735996...

12. The mean is 250, and the standard deviation is 5.



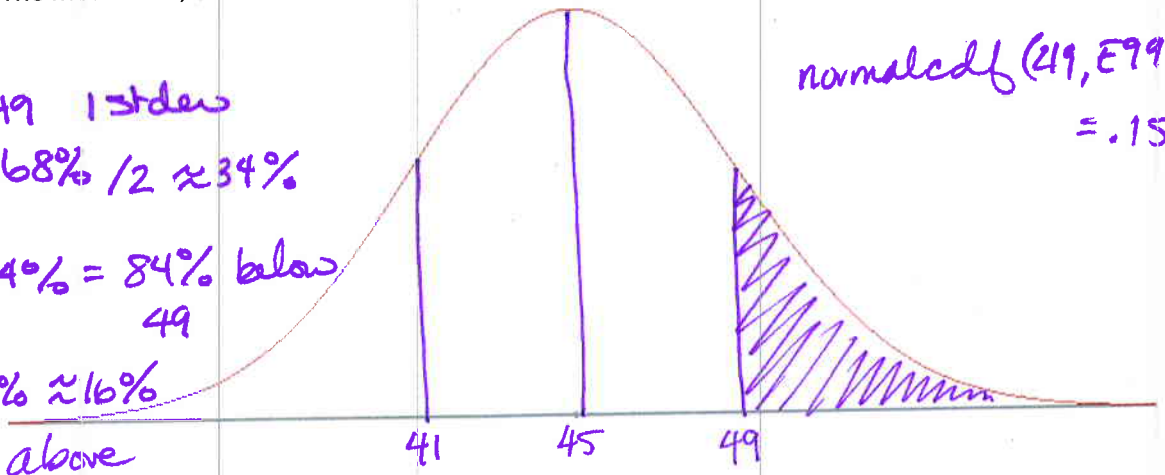
invNorm(.0808, 250, 5) = 243

invNorm(.9918, 250, 5) = 262

.0808 + .9110 = .9918

Instructions: On the blank normal distribution graphs below, mark the mean and additional values in units of standard deviations. Shade the region described by the situations for each problem.

13. The mean is 45, the standard deviation is 4. Find the probability of being above 49.



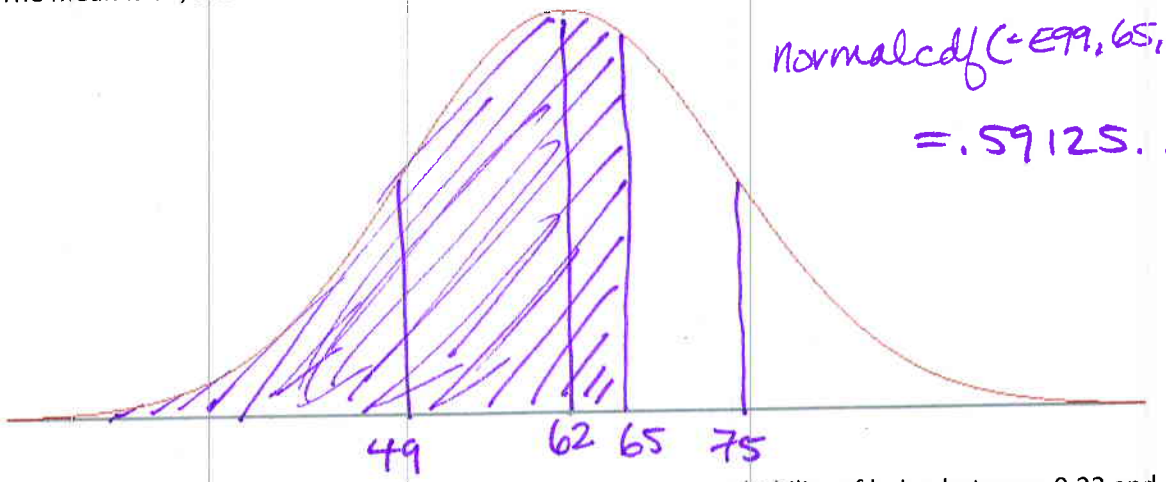
normalcdf(49, E99, 45, 4)
= .158655...

41-49 1 stdev
≈ 68% / 2 ≈ 34%

50% + 34% = 84% below 49

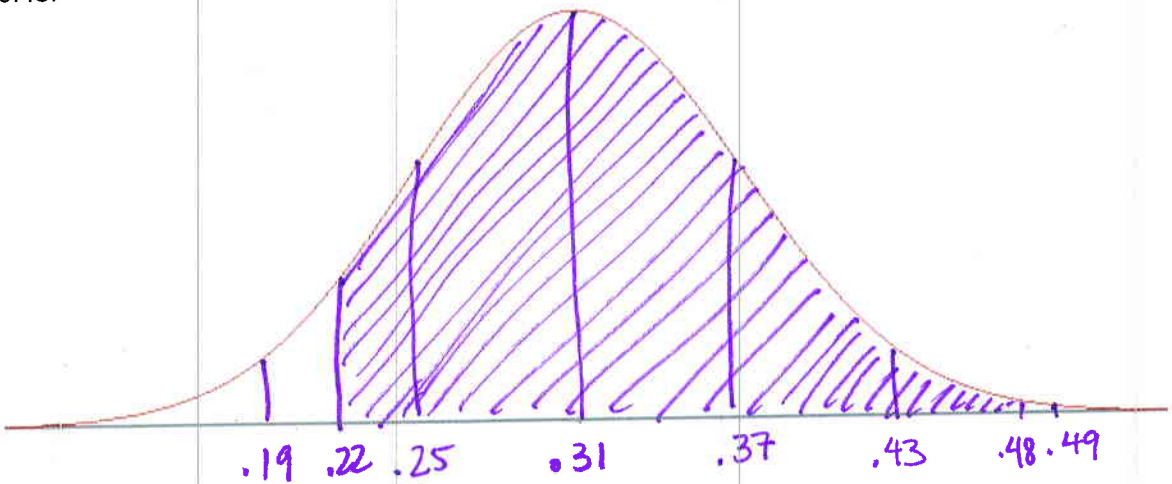
100 - 84% ≈ 16% above

14. The mean is 62, the standard deviation is 13. Find the probability of being below 65.



normalcdf(-E99, 65, 62, 13)
= .59125...

15. The mean is 0.31, the standard deviation is 0.06. Find the probability of being between 0.22 and 0.48.



normalcdf(.22, .48, .31, .06) = .930889...