

Dr. Bensmail

NAME:.....

SS#.....

**Exercise 1:**

...Calculate:

1.  $P(0.5 < z < 2.1) = p(0 < z < 2.1) - p(0 < z < 0.5) = 0.4821 - 0.1915 = 0.2906$

2.  $P(z > 2.3) = 0.5 - p(0 < z < 2.3) = 0.5 - 0.4893 = 0.0107$

3.  $p(z < 0.5) = 0.5 + p(0 < z < 0.5) = 0.5 + 0.1915 = 0.6915$

4. calculate  $z^*$  such that  $p(-z^* < Z < z^*) = 0.78$

$p(-z^* < Z < z^*) = 2 * p(0 < z < z^*) = 0.78$

so

$p(0 < z < z^*) = 0.78/2 = 0.39$

$z^* = (almost) = 1.23$

**Exercise 2:**

Suppose that  $x$  a random variable from a sample that has a **binomial** distribution with  $n = 5$  and  $p = 0.6$ .

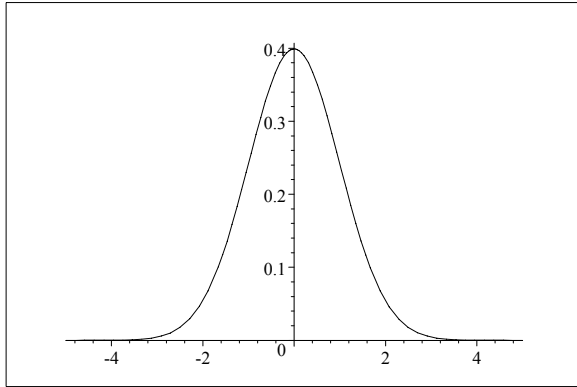
1. calculate

•  $P(x = 2) = \frac{n!}{x!(n-x)!} p^x (1-p)^{n-x} = \frac{5!}{2!(5-2)!} (0.6)^2 (1-0.6)^{5-2} = 0.2304$

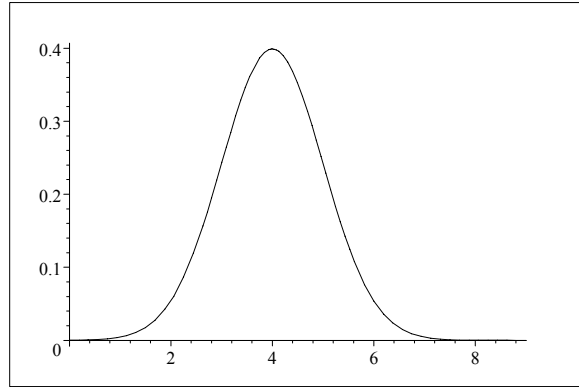
•  $P(x = 5) = \frac{5!}{5!(5-5)!} (0.6)^5 (1-0.6)^{5-5} = 0.07776$

•  $P(x = 1) = \frac{5!}{1!(5-1)!} (0.6)^1 (1-0.6)^{5-1} = 0.0768$

.....  
..Exercise 4:



Plot 1



Plot 2

Please fill what is missing.

**Plot 1** is the probability curve of a ..standard normal distribution (mean=0 and variance =1)

**Plot 2** is the probability curve of a..normal distribution.

The mean of the density function given by the **Plot 1** is  $\mu = 0$

The mean of the density function given by the **Plot 2** is  $\mu = 4$