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SOLUTIONS  
BONUS ASSIGNMENT  
HYPOTHESIS TESTING  
 $\mu$ , with  $\sigma$  KNOWN  
FALL 2009

①

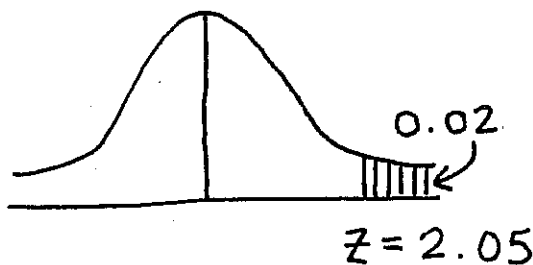
$X$  = WAITING TIME FOR CHECKOUT

$H_0: \mu \leq 9$  (NO MORE THAN 9)

$H_a: \mu > 9$  (MORE THAN 9)

SIGNIFICANCE LEVEL 0.02

WE USE Z-TABLE SINCE  $\sigma$  IS 2.5  
& PARENT POPULATION IS NORMAL



(LOOK UP 0.48  
AREA IN TABLE)

TEST VALUE  $\bar{X} = 10.6$

$$\sigma_{\bar{X}} = \frac{2.5}{\sqrt{24}} = 4.90$$

$$Z = \frac{10.6 - 9}{\frac{2.5}{\sqrt{24}}} = 3.14$$

(2)

$$Z = 3.14$$

So  $Z$  is in the rejection

WE REJECT  $H_0$ .

WE CAN REJECT THE SUPERMARKET'S CLAIM.

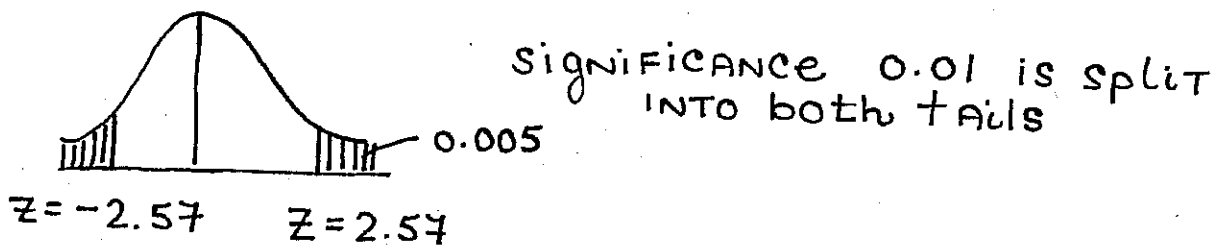
(2)

$X =$  battery life (IN MONTHS)

$$H_0: \mu = 45$$

$$H_a: \mu \neq 45$$

we use  $Z$ -table since  $\sigma = 4.5$  is known & the parent population is normal



test value  $\bar{x} = 43.05$

$$\sigma_{\bar{x}} = \sigma / \sqrt{n} = 4.5 / \sqrt{24} = 0.919$$

$$Z = \frac{43.05 - 45}{0.919} = -2.12$$

We do NOT REJECT  $H_0$ .

The AVERAGE battery life is 45 months  
(AT 0.01 SIGNIFICANCE)