Hypothesis Testing 1) In each of the following situations, state whether it is a correctly stated hypothesis testing problem and why? a) Ho; = 25, H= +25 - True 9 H. >10, H. =10 - False e) H = 50, H, \$50 - True d) H. = 0.1, H. = 0.5 - False e) Ho = 30 , Hi = 30 - False. a) A certain chemical pollutant in the Genesee River has been constant for serveral yes with  $\mu$ : 34 ppm and = Sppm. A group of environmentalists will test at 1% lend of significance. n = 50, M: 325ppm. Perform a hypothesis test at 1% level on significance. at 170 level of significance. Sola Hypothesis: Ho: 11=34 H: 1 = 34 Significance level: 1% test statue 1=34, S=8, n=50, x=32.5 2=0.01 Z = x-11 = 32.5.34 = -1.3 5. / 10 8/150 P= 1- (-1.33) P=1+1.33 P=2.33 The critical value is ± 2.58 The computed value of z=-1.33 falls in acceptance Accept rull hypothesis

3) The average cost of textbooks is is is 52/with  $\sigma = 4.501 - A group g students

To test

That any cost is high. To test

The book store's claim against their alternative, the students

The book store's claim against of their alternative, the students$ will select random sample of size 100. Assume 11: 52.80 Perform hypo test at 5% level of significance. Soh Hypothesis Ho: 11:52 H: 1452 Significance level is 50% &= 0.05 test static M:52, 5=4:50 n=100 x=52-80 Z: M-re = 52.80-52 - 1.77 The 450/100 The oritical value is ± 1.96 P=1-0-9625 The Z=1.78 falls in acceptance region, = 3.75 %. Accept rull hypothesis. P=0.0375 . The mean any cost of book is RISIA W) On any family of four in US spends \$1135 amally. To test 22 families of 4 are randomly selected. Use the date and alpha of 0.5 to test hypothesis. Son Hypothesis Ho: M=1135 H; M\$ 1135 Significance level is 50% x=0.05 test static M=1135 N=22 8=240.37 × =1031.32  $S = \sqrt{\frac{2(x-\overline{x})^2}{n-1}} \qquad Z = \frac{\overline{\chi} - \mu}{s/\sqrt{n}} = \frac{1031.32 - 1138}{240.37} = -2.02$ = 240.37 The critical value of 2 is ± 1.96 The same of Z = 2.57 falls in rejection region. Reject rull hypoflusis. The arg dental expenses is not a civiate.

( ) Any annual family income on metropolis is \$48,632. What do you conclude if random Sample is 400 families. ong income of \$48,574 with 0 = 2000 ? Son Hypothesis H, = M= 48,432 H, = M £48,432 Significance level is 10% test static 11:48,432, 0=2000, n=400 x=18,574 Z= 21-21 : 48,574-48,432 = 1.42 The critical value is ± 1.645 The value of Z = 1.42 falls in acceptance regions Accept mill by pothesis 6) The ang price in US was \$32.28 per sq foot. Randomly samples of 12 warehouses are for sale & find the mean price is \$31.67. with 5 =\$ 1.29. Assume normally distributed. Significance level of 5%.
Test for hypothesis 30h Hypothesis Ho: M=32.28 H.: M=32.28 Significance level is 5% 2=0.05 test static M = 32.28  $\sigma = 1.29$  n = 19  $\alpha = 81.67$ Z= x-M = 31.67-32.28 = -2.1 The critical value is \$1.96 The value of Z = -2.1 falls in rejection origion. Reject null hypothesis. The ang price is charged.

8) Find the +- side for a sample size of Famonia
B) Find the grown a population mean 10 when is 1 100 100
16 taken from a population the sample of is 1.5. the sample mean is 12 and the sample of is 1.5.
$sd_{n=16}$ $t = \overline{x} - \mu$
S=1-5 15/16 15/4
el e con except 99%
9) Find the + scre below which we can expect 99%.  g sample means will fall if samples of size 16 are  g sample means will fall if samples of size 16 are
of sample means will fall if surplus of
de sample means with distributed population.
Solu 2=99% =001 df=n-1
n = 16 $de = 15$
1-2=0.99
2=0-01
2.602
tagg = -tagl
$\lambda = 0.01$ $t_{0.99} = -t_{0.01} = -2.602$
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10) If a random sample site 25 derawn from a normal population gives a mean of 60, and a 3 of 4 find the range of t-screes where we can expect to find
10) If a random sample site 25 decaum from a normal population gives a mean of 60, and a 3 of 4 find the range of t-schools where we can expect to find the sample mean Che n=25 $\mu=60$ S=4
10) If a random sample site 25 denaum from a notmel population gives a mean of 60 and a 3 of 4 find the sample of t-screes where we can expect to find the sample mean  Solve n=25 H=60 S=4  1-95% df=n-1
10) If a rondom sample size 25 denoum from a notmel population gives a mean of 60 and a of 9 4 find the sample of t-screen where we can expect to find the sample mean  Solve n=25
10) If a random sample size 25 derawn from a notmel population gives a mean of 60 and a 3 of 4 find the range of t-school where we can expect to find the sample mean $M = 60$ $S = 4$ Solve $n = 25$ $M = 60$ $S = 4$ $L = 95 = 76$ $L = 95 = 76$
10) If a random sample size 25 drawn from a notmel population gives a mean of 60 and a 3 of 4 find the sample mean  the sample mean  Solve n = 25
10) If a trandom sample size 25 decawn from a notmel population gives a mean of 60 and a 3 of 4 find the trange of t-screen where we can expect to find the sample mean  Solve n = 25
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10) If a random sample size 25 denoum from a notmel population gives a mean of 60 and a 3 of 4 find the sample of the scales when we can expect to find the sample ones.  Sthe n = 25