

Goodness of Fit

Some examples.

A QA manager wants to know if the quality of parts manufactured varies with the day of the week. She finds the average number of defective parts made on each day of the week. Using $\alpha = 0.05$ test the claim that the same number of defective parts are manufactured on each day of the week.

Day	Mon	Tue	Wed	Thu	Fri
Number	32	16	23	19	40

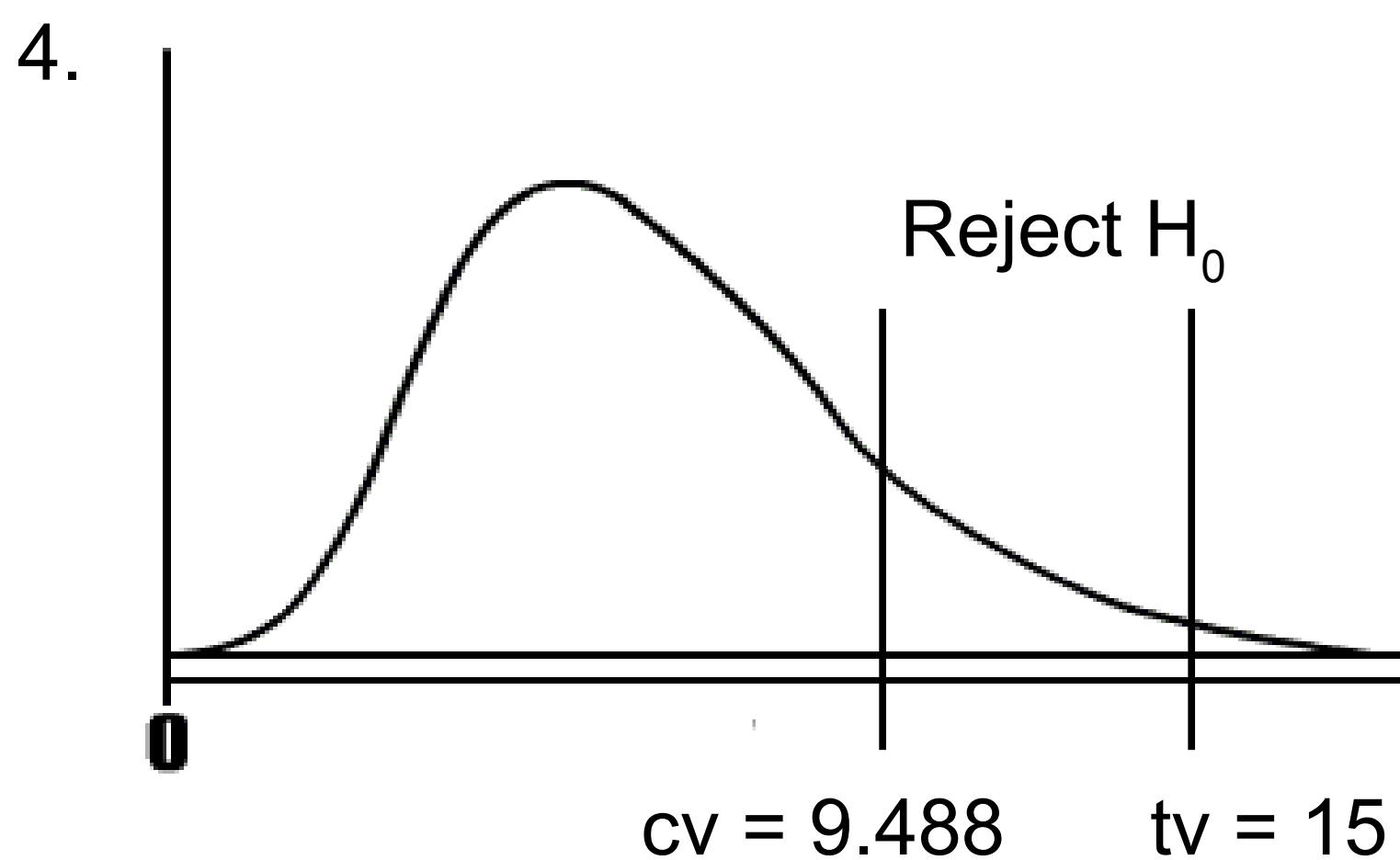
1. H_0 : There is no difference in the number of defective parts manufactured on each day of the week.

H_1 : There is a difference in the number of defective parts manufactured on each day of the week

2. $\alpha = 0.05$, d.f. = $5 - 1 = 4$, From table: cv = 9.488

$$3. t.v. = \frac{(32-26)^2}{26} + \frac{(16-26)^2}{26} + \frac{(23-26)^2}{26} + \frac{(19-26)^2}{26} + \frac{(40-26)^2}{26}$$

$$tv = 15$$



5. *There is enough evidence to reject H_0 at $\alpha=0.05$, so there is not enough evidence to support the claim that there is no difference in the number of defective parts manufactured on each day of the week.*

A college has a policy that final grades are curved so there are 5% A's, 40% B's, 30% C's, 20% D's, and 5% F's. Test one professor's final grades to see if they are different from expected, use $\alpha = 0.05$.

Grade	A	B	C	D	F
Number	8	45	52	39	6
Expected	5%	40%	30%	20%	5%

1. H_0 : These final grades conform to dept. policy,

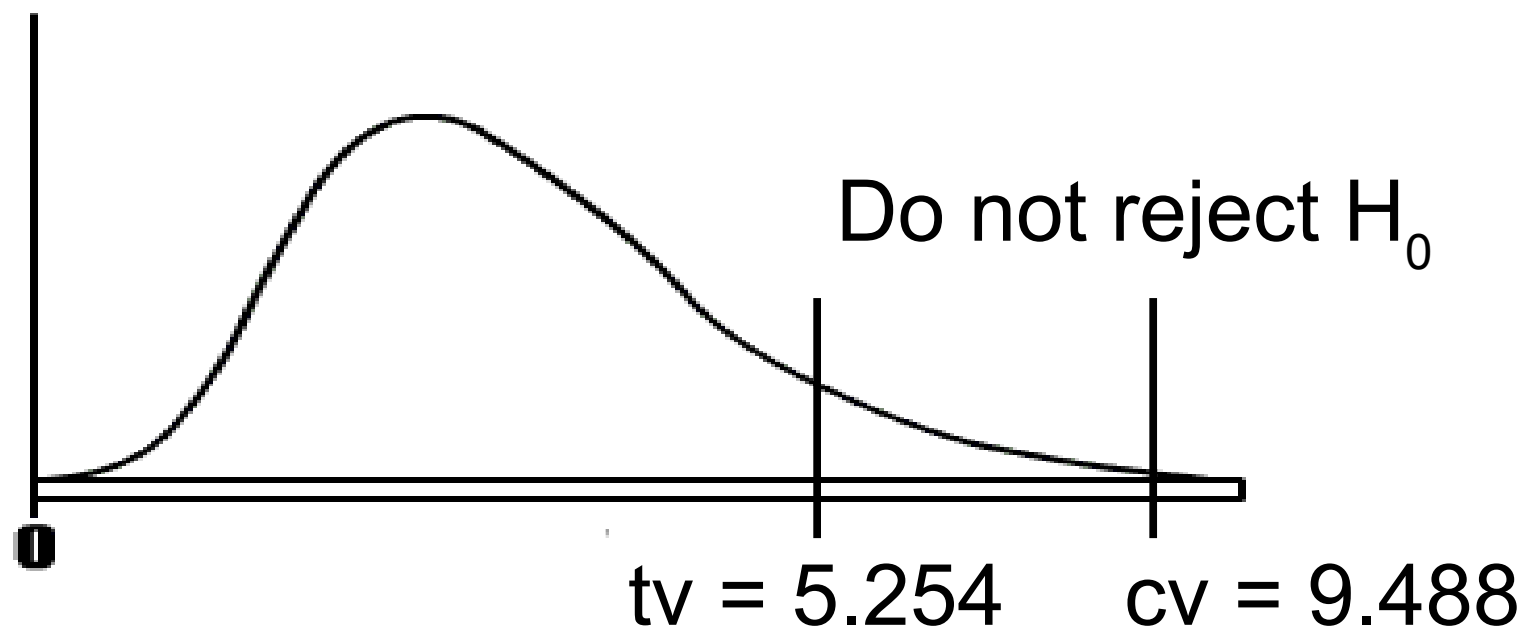
H_1 : These final grades do not conform to dept policy.

2. $\alpha = 0.05$, d.f. = $5 - 1 = 4$, From table: cv = 9.488

$$3. tv = \frac{(5.3 - 5)^2}{5} + \frac{(30 - 40)^2}{40} + \frac{(34.7 - 30)^2}{30} + \frac{(26 - 20)^2}{20} + \frac{(4.0 - 5)^2}{5}$$

$$tv = 5.254$$

4.



5. *There is not enough evidence to reject H_0 at $\alpha=0.05$, so there is not enough evidence to reject the claim these final grades do not conform to dept policy.*

The International Ice Cream Association(1994) gives these numbers for ice cream sales at supermarkets, which is compared to your stated preferences.

Vanilla	28%	3
Fruit Flavors	15%	4
Nut Flavors	13.5%	9
Candy Flavors	12.5%	8
Chocolate	8%	2
Cake/Cookie Flavors	7.5%	1
Neapolitan	7%	7
Coffee/Mocha	3%	5
Other	5.5%	6

Test whether the your ranking matches the Association ranking based on supermarket sales.