

(4, 9.75, 15, 19.25, 20), $\bar{x} = 13.8 = D+$.

p. 580: 8. (20 pts)

- (a) (5 pts) Let p be the unemployment rate in this city. When writing the hypotheses, you should use the symbol p and the numerical value of p_0 . The hypotheses are

$$H_0 : p = 0.05$$

$$H_1 : p > 0.05$$

- (b) (10 pts) The sample proportion is $\hat{p} = \frac{125}{2000} = 0.0625$. The test statistic is

$$z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}}.$$

Its value is

$$z = \frac{0.0625 - 0.05}{\sqrt{\frac{(0.05)(0.95)}{2000}}} = \frac{0.0125}{0.00487} = 2.565.$$

The p -value of 2.565 is

$$\text{normalcdf}(2.565, E99) = 0.005160.$$

- (c) (5 pts) Because the p -value is less than α , we reject H_0 . Our conclusion is that the unemployment rate in this city is greater than 0.05.