

## Homework Solutions

### Chapter 6 – Page 376

#### Exercise 32

- (a) The base of the triangle is 6 and the area must be 1. The formula for area is  $A = \frac{1}{2}bh$ . So we have the equation

$$\begin{aligned}A &= \frac{1}{2}bh \\1 &= \frac{1}{2} \times 6h \\1 &= 3h \\h &= \frac{1}{3}.\end{aligned}$$

- (b) Symmetric.
- (c) Find the area under the graph from 0 to 3. That is a triangle with base 3 and height half of the total height from part (a), i.e.,  $h = \frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$ . So the area is  $A = \frac{1}{2} \times 3 \times \frac{1}{6} = \frac{1}{4}$ .
- (d) The significance level is the same as  $\alpha$ . The direction of extreme is to the left. So  $\alpha$  is the area under the null hypothesis from 0 to 1. That shape is a triangle of base 1 and height  $\frac{1}{18}$ , so its area is  $\frac{1}{36}$ .
- (e) Use the graph for the alternative hypothesis and find the area from 1 to 6. Add up the values:  $A = 0.10 + 0.05 + 0.05 + 0.10 + 0.35 = 0.65$ . Or you could simply compute  $1 - 0.35 = 0.65$  by removing the leftmost segment.
- (f) According to the decision rule in part (d), that value would support  $H_0$ .