

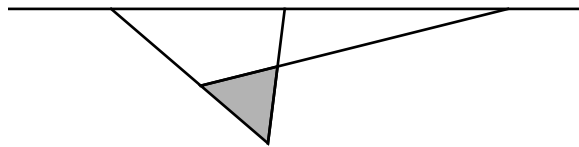
**1.** Henle 11.17

You are welcome to use the formulas for arclength and area on page 120.

**2.** Henle 13.3**3.**

a) Find a plane through the origin that contains the points  $(1, 2, 3)$  and  $(1, 1, 1)$ .

b) Doing no real work, find a line through the origin that is the intersection of the plane  $x + 2y + 3z = 0$  with the plane  $x + y + z = 0$ .

**4.** Consider the diagram below of a triangle in a plane, drawn in perspective. Fill the plane with triangular tiles. (Half a rectangle is a triangle....)**5.** An abstract projective plane concerns abstract quantities *points* and *lines* and a relation *on* that satisfy the following axioms:

- Any two distinct points are on a unique line.
- Any two distinct lines are on a unique point.
- There exist a set of four points, no three of which are on the same line.

We will prove that  $\mathbb{R}P^2$  satisfies 1) and 2). Show that it also satisfies 3).

**6.** Henle 13.11