What have Helianthus annuus and Helix pomatia got in common? First of all, you probably need to know what these things are. Helianthus annuus is generally known as the (common) sunflower, while Helix pomatia is the common or garden French snail that finds its way onto dinner plates in fancy restaurants all around the world.

We suppose there's a sense in which both the sunflower and the escargot are edible. The one provides seeds to go in snacks and salads and edible oil which is used in margarine and for cooking, while the other provides what some people believe is a delectable source of protein. But the gastronomic connection is not what we had in mind.

1.1 CONSTRUCTIONS

While you're working on that conundrum, try doing something more practical. In Figure 1 we have a spider web grid for you. You might like to photocopy or trace it, because we want you to start drawing all over it. While we're not against defacing books if it's in...
a good (mathematical) cause, you may want to use Figure 1 several more times. It's best to start with a clean version each time.

What do you see in Figure 1? There is a series of concentric circles whose radii are increasing at a constant rate. In fact, the radii are 1, 2, 3, 4, 5, and 6 units, respectively. Then there is a series of straight lines all of which pass through the central point. The angle between neighboring pairs of these straight lines is 30°. Actually, you'll notice that these lines go off to infinity in only one direction. We call such half-rays rays.

Some of you may recognize Figure 1 as polar graph paper but we won't worry about that for a moment or two. What we are interested in is that you go off and find a rectangular piece of cardboard. You'll need a pencil too. We'll wait here while you go and get them.

Now look at Figure 2. Choose a point \( P_1 \), anywhere on one of the rays of Figure 1. Now put the cardboard on your polar graph paper so that one side touches \( P_1 \). Then slide the cardboard so that the adjacent side of the card touches the next ray (see Figure 2(a)). When you've done that, mark the point on this next ray which is at the corner of the right angle in your card. Call this new point \( P_2 \).