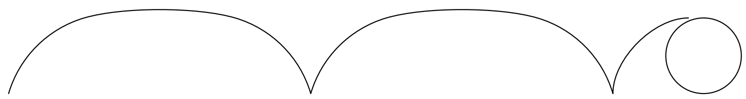
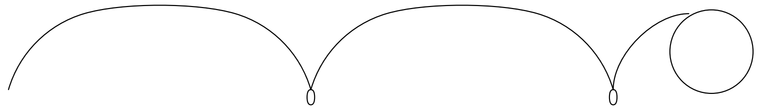
More curves and special points: help for helpers

1. This is the cycloid:



It does have special points if the insect is really on the outside of the tyre: they look rather like the special points of the ivy-leaf curve.

2. Now there is a little loop at the bottom of each hump of the cycloid, like this:



When the insect is on the little loop at the bottom it is going backwards! No matter how fast a train goes, there is always a bit of it going backwards. There are special points, too, where the loops cross.

3. Do you think either of the curves you have drawn have special points?

See above.

4. Make up a rule for drawing a curve of your own. Does it have special points?

They may not have any ideas, so here are some:

roll one coin around another; wind a string round a thick pole and see how the end spirals in (goats can be used again here); spirograph-type curves; move so that your distance from two circles is the same; look at a point on one of the other edges of the set square when you draw the ivy-leaf; roll ellipses, or roll on ellipses. Most of them will have special points.