The great white shark (Charcharodon carcharius) is a magnificent animal that is perfectly adapted to its environment (see Figure 70.1). This creature is feared and maligned by many people because of the image of the shark as a mindless, savage, sadistic killer from movies like "Jaws." In reality, more people are killed each year by bees than by great white sharks.

Figure 70.1: A great white shark
(*Carcharodon carcharias*).

It was long thought that the habitat of the great white included only North America, southern Africa, Australia, New Zealand and Japan. However, evidence has been slowly accumulating to suggest that great whites may also live in the Mediterranean sea.

In 1984, a German fisherman caught a great white off the coast of an Italian beach resort. Concerned about the possible impact on tourism, and to prevent a massacre of sharks, the owners of the beach resort hushed the incident up. In the subsequent years, the owners kept an eye on shark numbers, collecting the statistics shown in Table 1.

Number of Sharks (P)	13	16	21
Relative Growth Rate ($\frac{1}{P}\frac{dP}{dt}$)	1.5	1.4	1.2

Table 1

- **Use the data in Table 1 to find a differential equation that describes the change in the shark population over time.**

- *Experts from the University of Hawaii estimate that when fifty or more sharks are living along a stretch of coastline, even tourists will start to notice them. Prior to 1984, no tourists at the Italian resort had spotted a shark. Is there a danger of tourists spotting sharks in the future? Explain your reasoning with the aid of a slope field.*

P

0

0

t
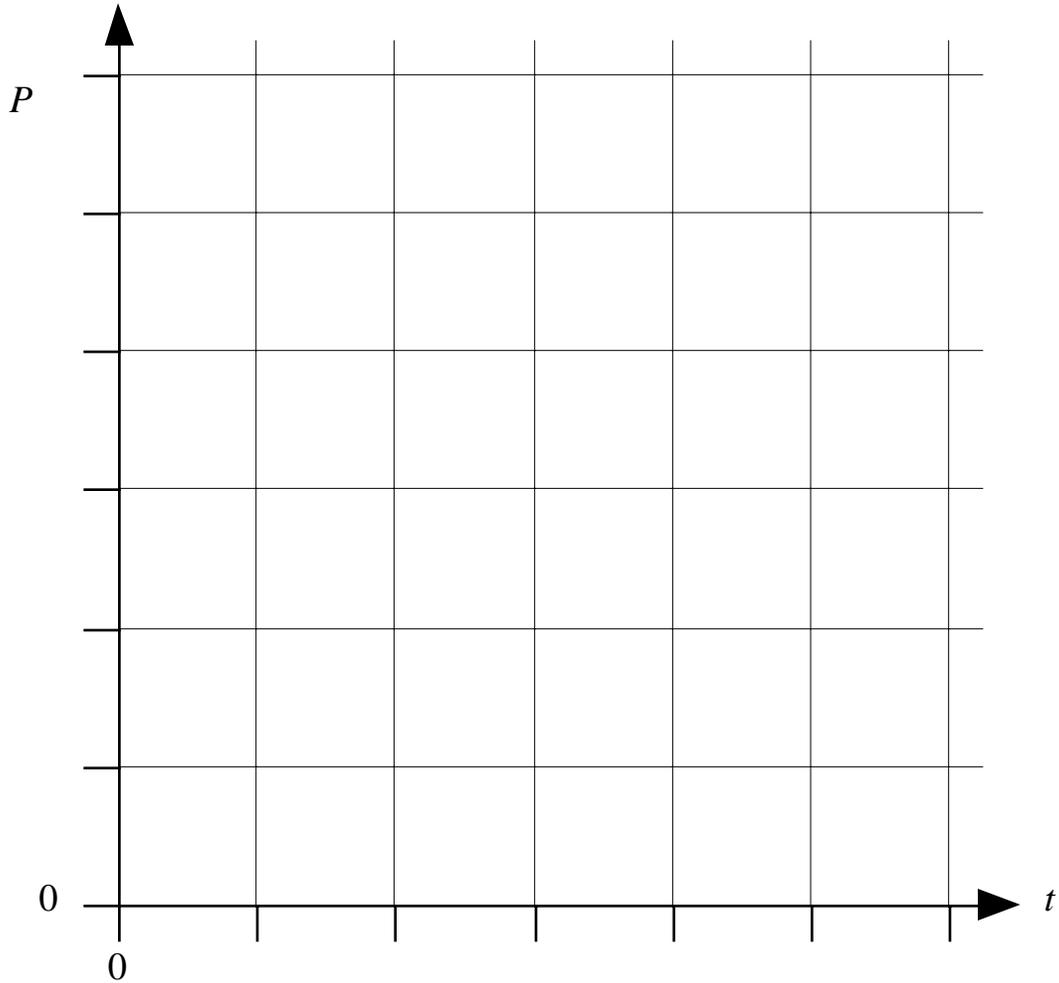
- *About when will the shark population reach 25 sharks? According to your slope field, will the shark population ever reach 50 sharks?*