A car drives in a highway exceeding the speed limit with a constant seed of 160 km/h and passes a motion less police car. Immediately the police car commences the persue in the exact instant the first car passes the police car. The police car accelerates the vehicle at 3 m/s^2 constantly if it continues at this rate; calculate the time it will spend to catch up with the civilian car and the distance it will take to do so.

Distance, traveled by the car:

$$S = vt$$

Police car should travel the same distance at the same time:

$$S = \frac{at^2}{2}$$

We will get equation

$$vt = \frac{at^2}{2} =\rightarrow t = \frac{2v}{a} = 2 \cdot \frac{\frac{160}{3.6}\frac{m}{s}}{3\frac{m}{s^2}} \approx 29.6s$$

Traveled distance:

$$S = \frac{160}{3.6}\frac{m}{s} \cdot 29.6s \approx 1316m$$

Answer: time to catch $t \approx 29.6s$

Traveled distance: $S \approx 1316m$