## Exercise 22

The U.S. Census tracks the percentage of persons 25 years or older who are college graduates. That data for several years is given in Table 48. Determine whether the trend appears linear. If so, and assuming the trend continues, in what year will the percentage exceed 35%?

Year	Percent Graduates
1990	21.3
1992	21.4
1994	22.2
1996	23.6
1998	24.4
2000	25.6
2002	26.7
2004	27.7
2006	28
2008	29.4

Table 4

Solution

Plot the following points on a graph: $(1990, 21.3)$, $(1992, 21.4)$, $(1994, 22.2)$, $(1996, 23.6)$, $(1998, 24.4)$, $(2000, 25.6)$, $(2002, 26.7)$, $(2004, 27.7)$, $(2006, 28)$, and $(2008, 29.4)$.
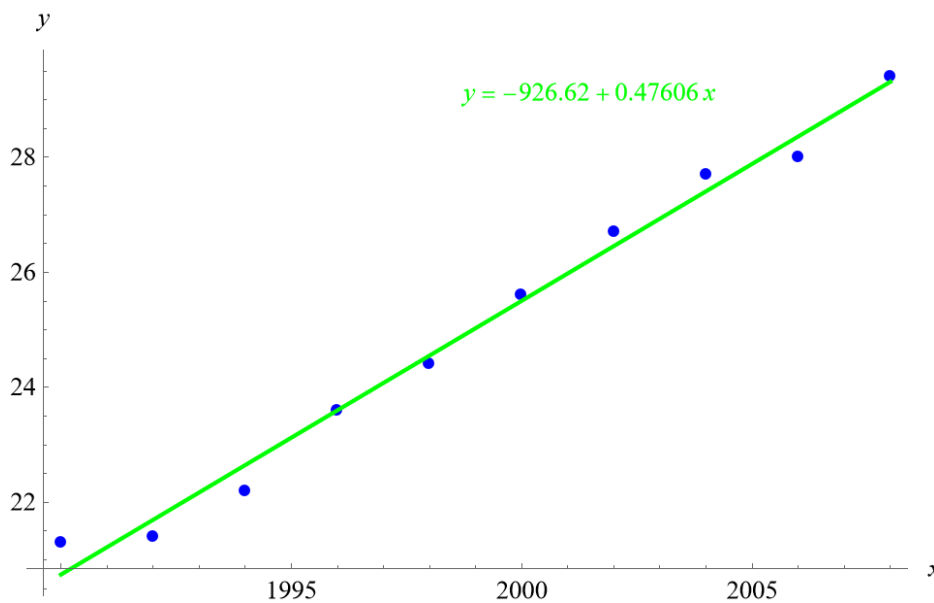
$$y = -926.62 + 0.47606\,x$$

The trend does appear linear. Mathematica's FindFit function gives

$$y = -926.62 + 0.47606x$$

as the line that best fits the data. Find when the percentage exceeds 35% by solving the following inequality.

$$y > 35$$

$$-926.62 + 0.47606x > 35$$

$$0.47606x > 35 + 926.62$$

$$0.47606x > 961.62$$

$$x > \frac{962.62}{0.47606} \approx 2019.96$$

Therefore, starting in 2020 the percentage will exceed 35%.