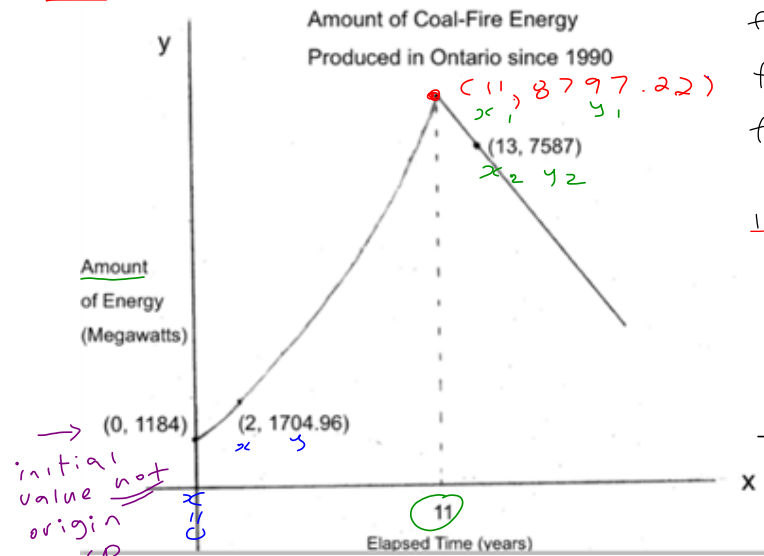


LESSON 11 - DETERMINING THE EQUATION OF A PIECEWISE FUNCTION

TASK 1 - THE END OF COAL

The province of Quebec generates most of its energy from hydroelectricity. Hydroelectric dams can create environmental problems but far less than coal plants that contribute significantly to air pollution and high levels of CO₂ in the atmosphere. After issuing "seven smog advisories covering 23 days" in 2001, the province of Ontario declared its intention to eliminate its reliance on coal fire electricity. The graph below describes the amount of coal-fire energy (in megawatts MW) produced in Ontario as a function of elapsed time since 1990.

Determine how much coal-fire energy Ontario produced in 1995 compared to 2010.



exp

$$f(x) = 1184(1.2)^x$$

$$f(x) = ab^x$$

$$f(x) = 1184b^x$$

$$y = 1184b^x$$

$$\frac{1704.96}{1184} = \frac{1184b^2}{1184}$$

1.44 = b²

$$\sqrt{1.44} = \sqrt{b^2}$$

1.2 = b

sub in equation

$$f(x) = 1184(1.2)^x$$

solve

find y when x=11

find f(11)

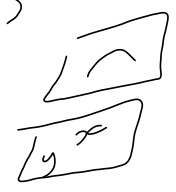
$$f(x) = 1184(1.2)^x$$

$$f(11) = 1184(1.2)^{11}$$

$$f(11) = 8797.22$$

find

$$y = ax + b \quad a = \frac{y_2 - y_1}{x_2 - x_1}$$



TASK 2 – PETEY THE PUP

Petey the Pup was an American Pit Bull Terrier, and after his appearance in the 1920 version of “The Little Rascals”, the pit bull became America’s dog. The graph below describes the growth and the decline of the popularity of the pit bull as a function of time since 1976.



Before 1982, pit bulls were considered nanny dogs, but after that year they were attributed with more of a dangerous reputation for kids.

Determine how many pit bulls there were in the USA in January 1st 1980 versus how many there should be in January 1st 2025 if the current trend continues.

