

$\text{CO}_2$

2/21/23

1  $C = C_n + Ae^{kt}$

$C_n \rightarrow$  natural  $\text{CO}_2$  level

$k \rightarrow$  exponential growth rate

$A \rightarrow$  human-produced  $\text{CO}_2$  before 1963

2  $\frac{dC}{dt} = Ae^{kt}$

3  $C - C_n = Ae^{kt}$

$\ln(C - C_n) = kt + C_1$

$$\frac{1}{C - C_n} = k \quad \begin{matrix} \text{derivative} \\ \text{linear} \end{matrix}$$
$$\frac{d}{dt} \left( \frac{1}{C - C_n} \right) = k(C - C_n)^{-2}$$

4 graphed taken in destmog

Linear Eq:  $\frac{dC}{dt} = 0.16(C - 250)$

5  $C = 250 + 50e^{0.16t}$

6  $C$  doubles at  $t = 92$

year = 2052

7  $C(63) = 4119.9$  probably good  
vs 2023  $\rightarrow 4119.2$