

Dimensions

$[M, L, T]$

SI units

$[kg, m, s]$

Significant figures
(Precision)

337

3

3·070

4

0000·07 = 7×10^{-2}
1

$$\begin{array}{ccccccc} 0.071 & \times & 78 & = & 5.46 \\ \textcolor{red}{1} & & \textcolor{red}{2} & & & & \\ & & & = & 5 & & (1 \text{ sf}) \end{array}$$

	1	2	3	4	5
0.06	X				
3.06			X		
21000					X
<u>1.00</u> <u>$\times 10^3$</u>			X		
4.060				X	

Newer round
intermediate
Steps

$$1 \text{ in} = 2.54 \text{ cm} \quad (3 \text{ sf})$$

$$2.1 \text{ cm} = 2.1 \left(\frac{1 \text{ cm}}{2.54 \text{ cm}} \right) \text{ in}$$

$$= 2.1 \left(\frac{1 \cancel{\text{cm}}}{2.54 \cancel{\text{cm}}} \right) \text{ in}$$

$$= 0.83 \text{ in}$$

$$2.1 \text{ cm}^2 = 2.1 \left(\frac{\text{cm}^2}{\text{in}^2} \right) \text{in}^2$$

$$= 2.1 \left(\frac{\text{cm}}{\text{in}} \right)^2 \text{in}^2 = 2.1 \left(\frac{1}{2.54} \right)^2 \text{in}^2$$

$$= 0.33 \text{ in}^2$$

Express 2.1 cm in feet

$$\begin{aligned} 2.1 \text{ cm} &= 2.1 \left(\frac{\text{cm}}{\text{in}} \right) \left(\frac{\text{in}}{\text{ft}} \right) \text{ ft} \\ &= 2.1 \left(\frac{1}{2.54} \right) \left(\frac{1}{12} \right) \text{ ft} \\ &= \underline{\underline{0.069 \text{ ft}}} \end{aligned}$$

Distance vs. Displacement

$$(x_2 - x_1)$$

$$= \Delta x$$

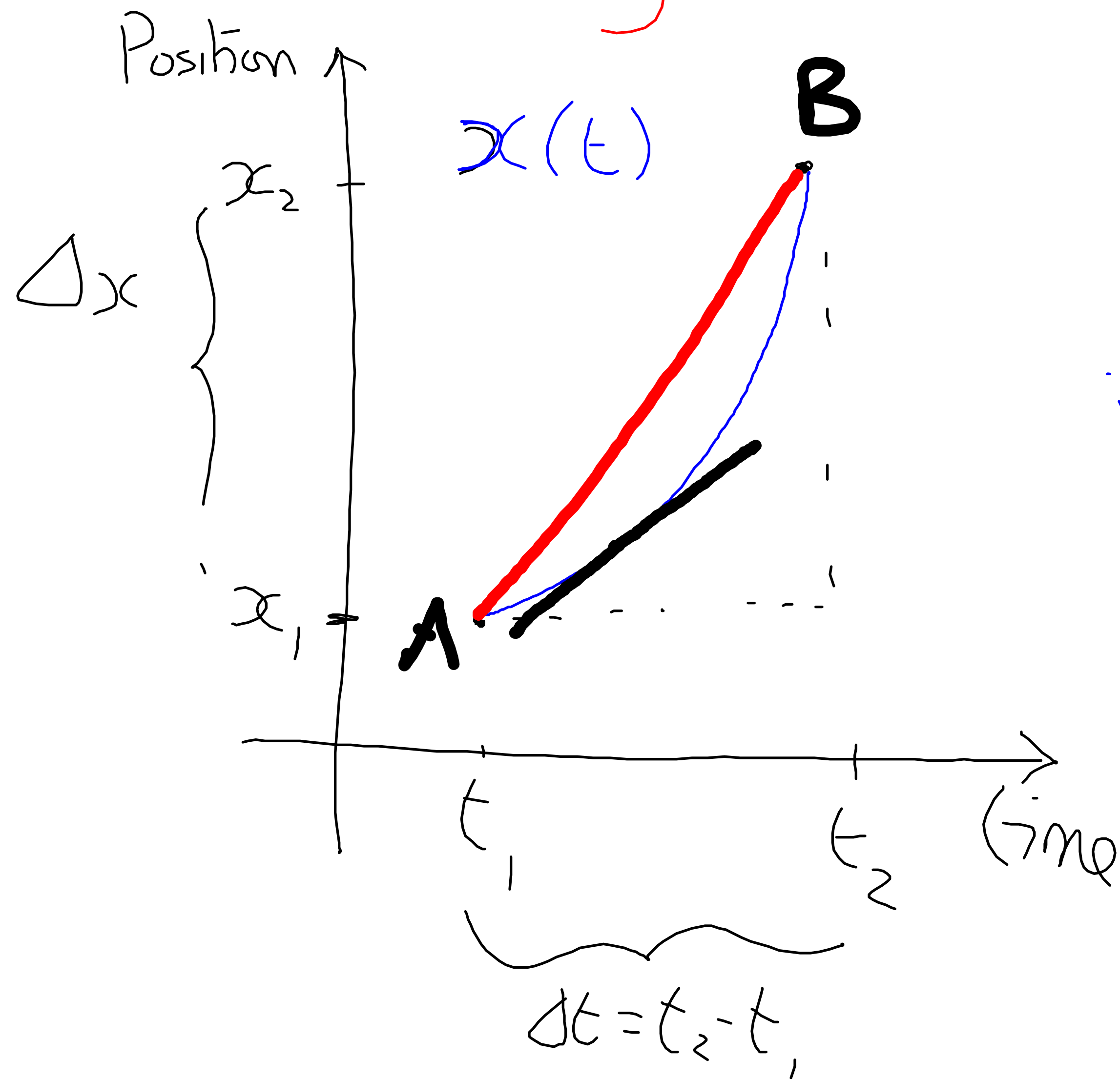
final
- initial

West is +

Dallas $\rightarrow$ FW Distance = 30 miles

Displ = +30 miles

Velocity



average

$$V_{x \text{ AVG}} = \frac{\Delta x}{\Delta t}$$

instantaneous

$$V_x = \frac{dx}{dt}$$

instantaneous

$$\text{Speed} = V = \left| \frac{dx}{dt} \right|$$

$$\text{average speed} = \frac{\text{distance}}{\Delta t}$$

Slope of
Line
A $\rightarrow$ B

Slope of
tangent

start distance = 210 cm

red speed = 43 cm/s

blue speed = 39 cm/s

$$\text{Speed} = \frac{\text{distance}}{\text{time}}$$

$$\text{red } d + \text{blue } d = 210 \text{ cm}$$