

Ch 2
DAY 28 § 2.1. pp. 80-82 # 2-10 even, 23, 24, 32-38 all

② AVG VEL $[0, 4] = \frac{-6 - -2}{4 - 0} = \frac{-4}{4} = -1$

④ AVG VEL $[0, 3] = \frac{4 - 1}{3 - 0} = \frac{3}{3} = 1$

⑥ $s(t) = e^t - 1$ AVG VEL on $[2, 4]$
 $y_1 = e^x - 1$
 $\frac{s(4) - s(2)}{4 - 2} = \frac{y_1(4) - y_1(2)}{2} = 23.604$
or $23.605 \frac{\mu\text{m}}{\text{sec}}$
 $(t, s(t))$
(sec, μm)

* ⑧ $s(t) = 3t^2$ AVG VEL on $t \in [1, 1+h]$
if i) $h=0.1$ ii) $h=0.01$ iii) $h=0.001$
 $y_1 = 3x^2$

HOME SCREEN

i) 0.1 STO \blacktriangleright H: $(y_1(1+h) - y_1(1)) / H = 6.3$
ii) 0.01 STO \blacktriangleright H: $(\quad \quad) / H = 6.03$
iii) 0.001 STO \blacktriangleright H: $(\quad \quad) / H = 6.003$
} TI-efficiency

* ⑩ $s(t) = \sin(2t)$ AVG VEL on $t \in [1, 1+h]$

$y_1 = \sin(2x)$ RADIAN MODE

HOME SCREEN

i) 0.1 STO \blacktriangleright H: $(y_1(1+h) - y_1(1)) / H = -1.008$
ii) 0.01 STO \blacktriangleright H: $(y_1(1+h) - y_1(1)) / H = -0.850$
iii) 0.001 STO \blacktriangleright H: $(y_1(1+h) - y_1(1)) / H = -0.834$
} TI-efficiency

Day 28 # 23, 24, 32-38 all

~~23~~ $s = f(t)$ AVG VEL on $[2, 6]$ REPEAT QUESTION

24 $f(t) = -16t^2 + 50t + 36$
 $y_1 = -16x^2 + 50x + 36$

a) height above ground = $f(0) = 36$ ft

b) AVG VEL for $[0, 1]$ sec. = $\frac{y_1(1) - y_1(0)}{1 - 0} = 34 \frac{\text{ft}}{\text{sec}}$
 S.O.S.

c) INST VEL estimate at $t=1$ = $\frac{y(1.001) - y(0.999)}{1.001 - 0.999} = 18 \frac{\text{ft}}{\text{sec}}$
 S.O.T.

MAX HT @ VERTEX. GRAPH 2ND CALC MAX

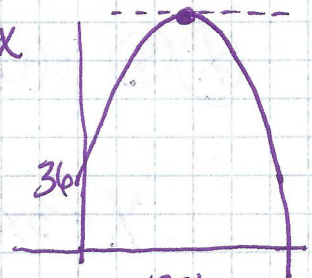
$s(t) = -16(t^2 - \frac{50}{16}t) + 36$

$s(t) = -16(t^2 - \frac{25}{8}t + (\frac{25}{16})^2) + 36 + 16(\frac{25}{16})^2$

$s(t) = -16(t - \frac{25}{16})^2 + 36 + \frac{25^2}{16}$

$s(t) = -16(t - \frac{25}{16})^2 + 75.0625$

VERTEX $(\frac{25}{16}, 75.0625)$ ft.

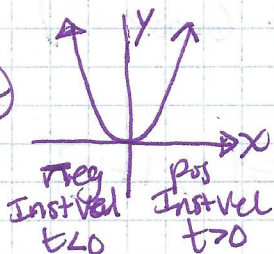


d) MAX HEIGHT is 76.0625 ft ← MAX.

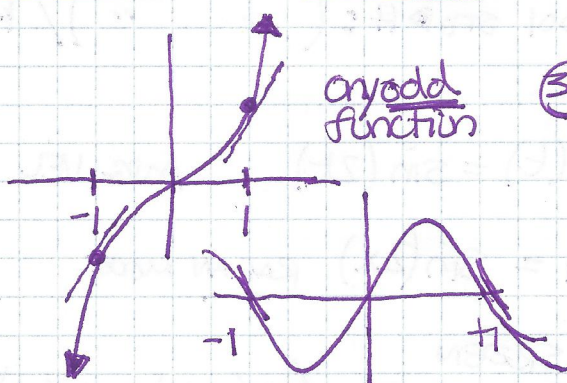
e) INST. VEL @ $t = \frac{25}{16}$ sec = $0 \frac{\text{ft}}{\text{sec}}$

OBJECT is momentarily at rest.

32



33



34 If 50 mph @ 2pm

& 60 mph @ 3pm

then the car travels b/w 50-60 miles between 2 & 3pm.

FALSE

No guarantee that the car didn't stop for the hour b/w 2pm & 3pm.

35 If 80 miles traveled b/w 2 & 4pm then velocity is close to 40 mph @ 2pm

FALSE

AVG VEL $\frac{80-0}{4-2} = \frac{80}{2} = 40$ mph, but no

guarantee that 40 mph @ 2pm.

36 TRUE

37 TRUE

38 TRUE