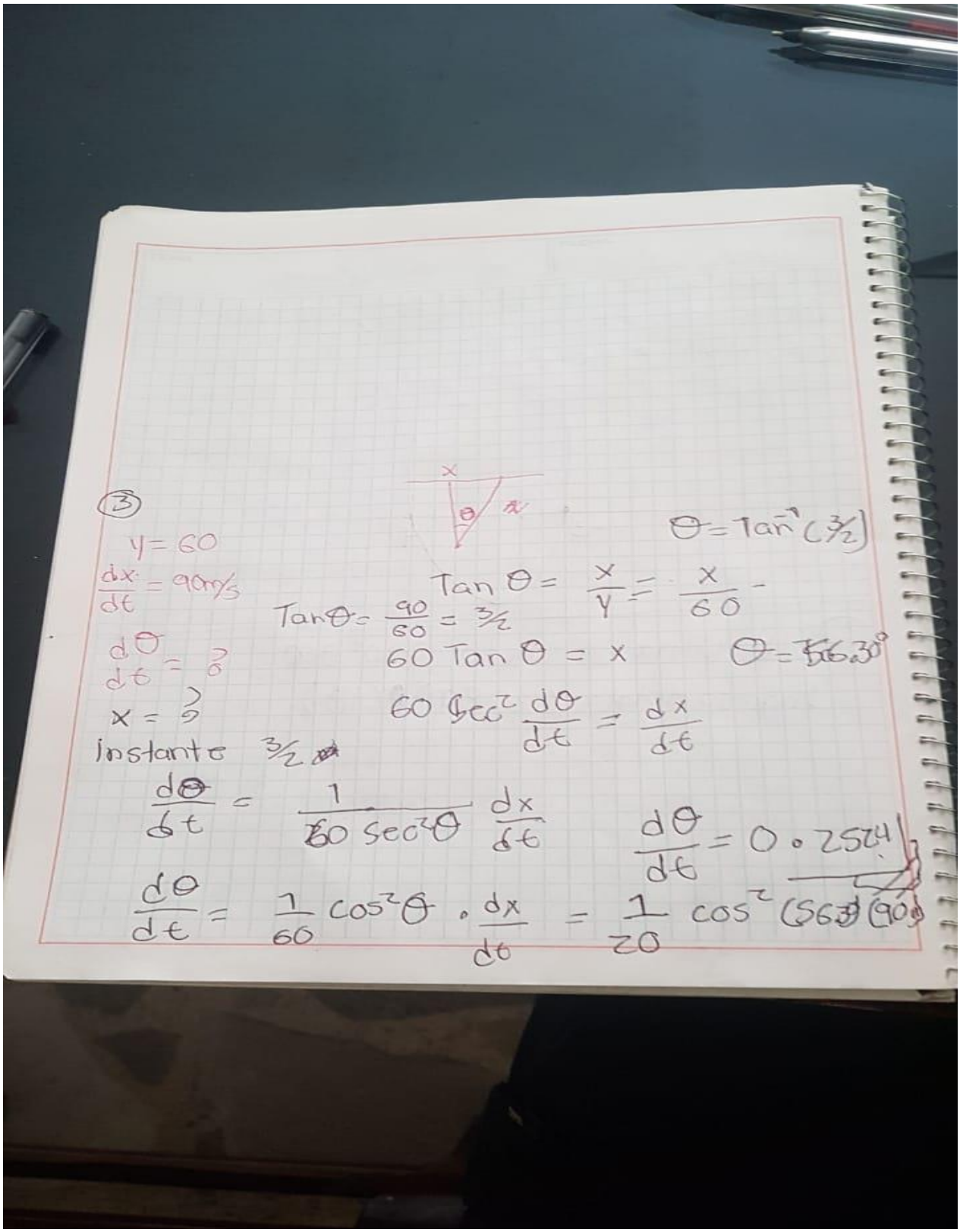
[Examen Calculo]

Axel Rafael López Orozco Idv C

31/03/2020


③
y = 60
dx/dt = 90 m/s
dθ/dt = ?
x = ?
instante 3/2
x
θ
z
Tan θ = 90/60 = 3/2
θ = Tan⁻¹(3/2)
Tan θ = x/y = x/60
60 Tan θ = x
θ = 56.30°
60 Sec² dθ/dt = dx/dt
dθ/dt = 1/60 Sec²θ dx/dt
dθ/dt = 1/60 cos²θ . dx/dt
dθ/dt = 1/20 cos² (56.3) (90)
dθ/dt = 0.252

Axel Rafael López Orozco

① $f(x) = \frac{2}{3}x^3 - x^2 - 24x$

$f(x)' = 2x^2 - 2x - 24$

$2x^2 - 2x - 24 = 0$

$x_1 = 4$

$x_2 = -3$

P.C

formula general

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Punto inflexion

$f(x)'' = 2(2x-1)$

$2(2x-1) = 0$

$2x - 1 = 0$

$2x = 1$

P.I = $x = \frac{1}{2}$

$f(4) = \frac{2}{3}(4)^3 - (4)^2 - 24(4) = -69.33$

$f(3) = \frac{2}{3}(-3)^3 - (-3)^2 - 24(-3) = 45$

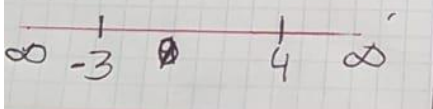
$(4, -69.33)$

$(-3, 45)$

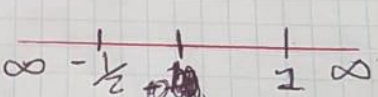
$f(\frac{1}{2}) = (\frac{2}{3})(\frac{1}{2})^3 - (\frac{1}{2})^2 - 24(\frac{1}{2}) = -12.166$

Intervalos de Crecimiento

Puntos criticos



Puntos de inflexión



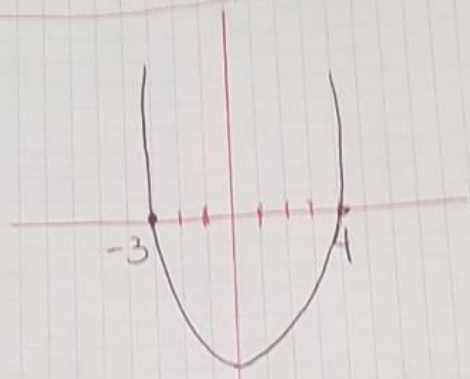
① coordenadas críticos

(4, -69.33) → Mínimo

(-3, 45) → Máximo

Inflexión

(1/2, -12.16)



② 18 turista costo $20 800

Ingreso total = (~~20 800~~ 400)(18)

f(x) = (~~20 800~~ 400)(x) y = 400 18

~~f(x)' = 1 1 - 0~~

~~(C.R) · (P))~~

~~PP x = CP (x + 400)~~

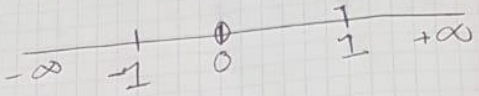
~~Puntos críticos~~

②

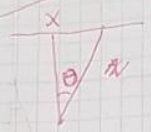
$f(x) = 400 \cdot 18 \cdot x$ Puntos críticos

$f'(x) = 1$ $x = -1$

-1 es máximo



③



$y = 60$

$\frac{dx}{dt} = 90 m/s$

$\frac{d\theta}{dt} = ?$

$x = ?$

Instante $3/2$

$\theta = \tan^{-1}(3/2)$

$\tan\theta = \frac{x}{y} = \frac{x}{60}$

$\tan\theta = \frac{90}{60} = 3/2$

$60 \tan\theta = x$ $\theta = 56.30°$

$60 \sec^2 \frac{d\theta}{dt} = \frac{dx}{dt}$

$\frac{d\theta}{dt} = \frac{1}{60 \sec^2\theta} \frac{dx}{dt}$ $\frac{d\theta}{dt} = 0.254$

$\frac{d\theta}{dt} = \frac{1}{60} \cos^2\theta \cdot \frac{dx}{dt} = \frac{1}{20} \cos^2(56.30)(90)$