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Research Article

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Hydrology & AT Math

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Abstract
In this paper, we put some Basic Hydrology Equations on a mathematical footing using our knowledge of AT Math.

1. Introduction

A Hydrologist claims that the Hydrologic Cycle is not an exact science. However, in this paper, we show that it is an exact science. It follows AT Math [1].

P- R - ET =0
P = Precipitation
R = Runoff
ET Evapotranspiration

$t^2 - t - 1 = 0$
It-(Q/A) ·t-ET = ΔS

I = Precipitation Intensity
Q = River Volume
A = Drainage area
ΔS = Storage

ΔS = 2t-1
$\Delta S = \Delta S_s + \Delta S_g$
ΔS_s = Change in Storage in surface water
ΔS_g = Change in Storage in groundwater

$\Delta S = \hat{v}/g = E = 1/\sin 60°$

$\hat{v} \cdot \sin 60° = 9.806$
$\hat{v} = 113.2$

$T\mu = \hat{v}$
$2.51^{(1/\pi)(\pi-e)} = 1.132$

$(1/t)^{(1/t)(t-e1)}$
T = Tensor from Relativity = Period T = 1/freq = 1/t = E

R = P-A
$(Q/A) \cdot t = t^2 - A$

$t^2 - t - 1 = 0$
A = 1
$A = F + \Delta S_s$
$\Delta S_s \sqrt{P} = \Delta S_s\ t$
Where P = It
t = π
$t^2 - t - 1 = 57.29° = 1$ rad = 100%

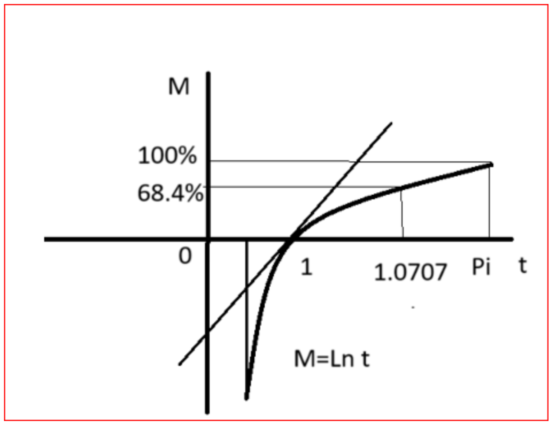

Figure 1: Rain Fall Intensity where 100% = t = Pi

$\Delta S = \hat{v}/g \times \sqrt{2}$
$\Delta S = \hat{v}/ [g \cdot t]$
Ober the long-term t = 161.8 or 161.8%
Hydrograph

Area Mt when $M < 0$
$M = \text{Ln } t = \text{Ln } 1/2 = -0.693$
$0.15335(1/2)\ (1/2) = 0.767$
$1/\text{Area} = 0.0383375$
$\text{GMPE} = 1/\sin\theta = -1.25$
$\theta=53.13$ [=] dimensionless
$0.684(0.5313) = 3634$
$1-0.3634 = 63652/\pi = 1/t = E$
$0.0383375/\ (\text{Ln } 1/2) = 2.65 \approx SF$

$I = 3$
$t = \sqrt{3}$
$\sqrt{3}^2-\sqrt{3}-1 = -2.67 = SF$
$d(mm) = 190\ \sqrt{D}$
Where D = duration
$d = 190\ \sqrt{3} = 57 \approx 57.29° = 1$
$\pi^2-\pi-1 = 57.29 = 1$ rad
IDF curve
$I = 0.396$ @$t = 180 = 3(60) =3$ Hrs

$t = I = 190-39.6 =150.4 = 1/G = 1/E = t$
$\int I \int = \int t = t^2/2 = 150.4^2/2 = 113.1 = \hat{v}$
$\Delta S = \hat{v}/g = 1\ 13.1/6.65 = 17.0075 \approx 190-20$

Stream discharge
$\hat{v} = 0.65+0.03N$
where N = revolutions per sec.
$\hat{v}$ [=] m/s
$\hat{v} = [113.2-0.65]/0.03 = 3751 \approx 1/2.67= 1/F = E$
$E = \hat{v}$ of the river
Freq = 375 = t
$375^2-375-1 = 1.402 = 1 + Re = E = \Delta S$
$E^2 = t^2 + t^2$
$E^2 = (1/2)^2 + (1/2)^2$
$E = 1/\sqrt{2}$
$\hat{v} = E = 1/\sqrt{2}$
113.2/16.009 =v^
$\hat{v}/16 = \hat{v} = M^2 = (\text{Ln } t)^2 = (\text{Ln } \pi)^2 = 13104$
=1+31
=1+p#

In the following figure, imagine that one of the GMP s is perpendicular to the parge since the flow in a conduit is a parabola in perpendicular directions.

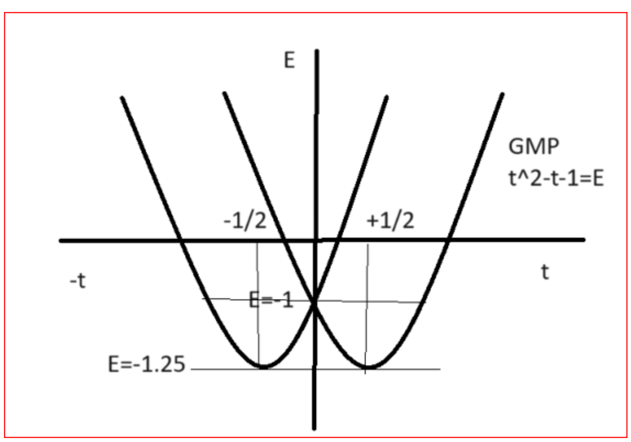

Figure 2: Stream Velocity Profiles

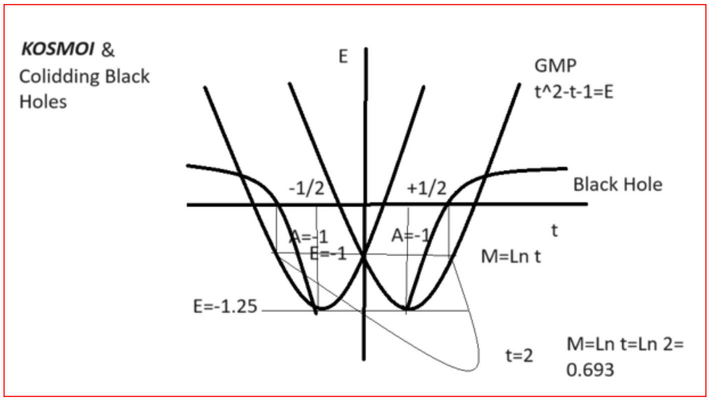

Figure 3: Rainfall Intensity and Stream Velocity profile. Critical Point is where t = 1/2 = 1.5 hrs

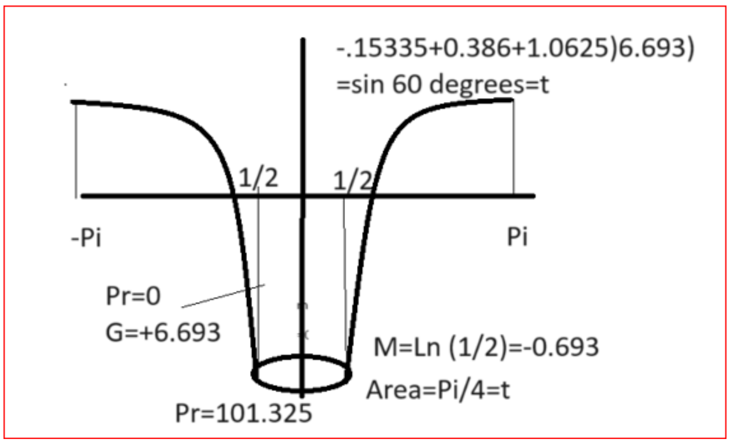

Figure 4

$t^2 - t - 1 = E$

$1.5^2 - 1.5 - 1 = -0.25$

Triangle Weir:

Q = 1.42 tan (θ/2) H1.5 (SI)

Q = √2tan (π/2) H1.5

tan (π/2) = 57.518≈57.29 = E

$Q = E\,{}^2Ht$

Q/A = 1 = 2H1.5

1/2 = 1.5 Ln H

H = 1.3956≈1.4 = 1 + Re = ΔS

H = ΔS = v̂/g

H = 1.132/9.806 = 11544 = 1/sin 60 = E when s = t

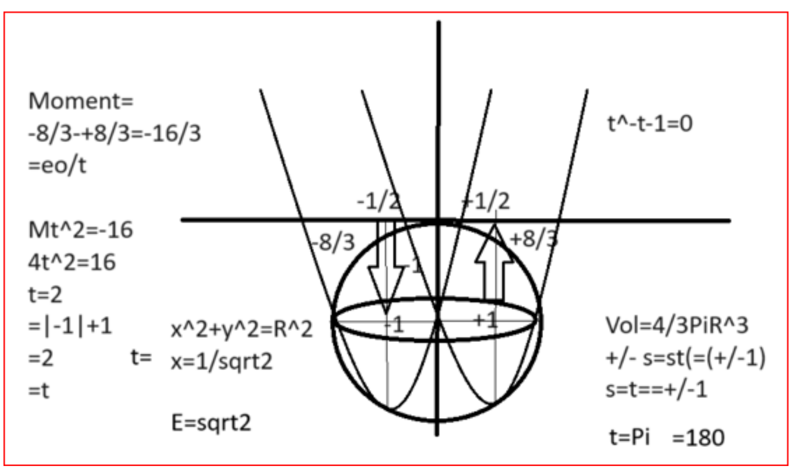

Figure 5

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1. Verma, S., Engineering Hydrology. Fundamentals and Applications. Water Resources Engineering Vol II. Bolton Ontario, Amazon. (?)