Collected papers of

Lord Soumadeep Ghosh

Volume 9

The correct pricing equation

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe the correct pricing equation. The paper ends with "The End"

Introduction

In this paper, I describe the correct pricing equation.

The correct pricing equation

The correct pricing equation is

$$P(t) = \frac{\frac{P(t+1)}{P(t)} - 1}{1 + r_f(t)}$$

where
$P(t)$ is the price of a good/service at time t
$r_f(t)$ is the risk-free rate at time t

The End

The Alternative Umbrella probability density function

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe the Alternative Umbrella probability density function which is never 1. The paper ends with "The End"

Introduction

In this paper, I describe the Alternative Umbrella probability density function which is never 1.

The Alternative Umbrella probability density function

The Alternative Umbrella probability density function is

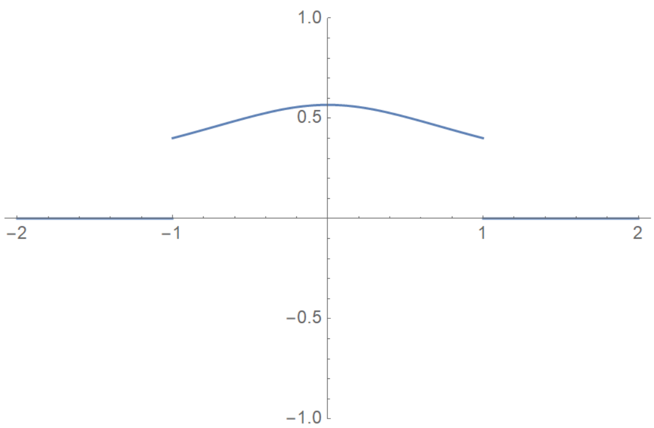
$$f(x) = \begin{cases} \frac{1}{2\sqrt{1+x^2}\sinh^{-1}(1)} & -1 \leq x \leq 1 \\ 0 & x < -1 \vee x > 1 \end{cases}$$

Then

1. $0 \leq f(x) < 1$ for all real x.
2. $\int_{-\infty}^{\infty} f(x) = 1$

Thus f(x) is a probability density function which is never 1 for any real x.

Plot of the Alternative Umbrella probability density function



The End

The linear classifier

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe the linear classifier. The paper ends with "The End"

Introduction

The linear classifier is the holy grail of classifiers. In this paper, I describe the linear classifier.

The linear classifier

The linear classifier is

$$c(x) = sign(x)$$

where

$$sign(x) = \{ \begin{array}{cc} -1 & x < 0 \\ 0 & x = 0 \\ 1 & x > 0 \end{array}$$

The End

Ghosh's linguistic table

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe Ghosh's linguistic table. The paper ends with "The End"

Introduction

Ghosh's linguistic table is the holy grail of linguistics. In this paper, I describe Ghosh's linguistic table.

Ghosh's linguistic table

Ghosh's linguistic table is

1			
1			
2	2		
3	6	6	
4	12	24	24

The End

Modern financial institutions

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe modern financial institutions that are necessary to modernize an economy.

Introduction

In previous papers, I've described traditional financial institutions like the reserve bank, the central bank and the gold bank and how to operate them. But modernizing an economy requires the creation of modern financial institutions described below in increasing order of superiority:

1. The life insurance corporation
2. The industrial development bank
3. The mutual funds industry
4. The exchange-traded funds industry
5. The hedge fund industry
6. The post office funds project
7. The village bank project
8. The political emergency fund
9. The pension fund industry
10. The investment bank industry
11. The sovereign wealth fund
12. The national stock exchange
13. The world bank office
14. The international monetary fund office

The End

Ghosh's augury table

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe Ghosh's augury table. The paper ends with "The End"

Introduction

Ghosh's augury table is the holy grail of augury. In this paper, I describe Ghosh's augury table.

Ghosh's augury table

Ghosh's augury table is

$$HKHK$$
$$KKHH$$
$$HRHR$$
$$RRHH$$

The End

Modern financial innovations

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe modern financial innovations that are necessary to modernize an economy.

Introduction

In previous papers, I've described traditional financial innovations like biadation, triadation and hexation. But modernizing an economy requires the creation of modern financial innovations described below in increasing order of superiority:

1. Inter-bank market
2. Inter-bank risk-free rate
3. High-frequency trading
4. Financial information market
5. Secured over-night risk-free rate

The End

Risky innovations

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe risky innovations that are possible in an economy.

Introduction

In previous papers, I've described traditional financial innovations and modern financial innovations: In this paper, I describe risky innovations that are possible in an economy in increasing order of risk **and** reward.

1. Real options
2. Exotic derivatives trading
3. Financial engineering
4. Money market mutual funds
5. Bio-medical instrumentation
6. Biological markets
7. Immigration
8. Nuclear options
9. Prototype invasion
10. Philosophers' war
11. Alchemists' war
12. Almighty's defeat
13. Almighty's draw
14. Almighty's victory

The End

The 14 national central banks

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe the 14 national central banks.

Introduction

In a previous paper, I've described how an economy can have only 14 sub-economies. Thus, in the planetary economy, there can only be 14 nations and thus, only 14 central banks. In this paper, I describe the 14 national central banks.

The 14 national central banks

1. Reserve Bank of India (`https://www.rbi.org.in`)
2. Sveriges Riksbank (`https://www.riksbank.se`)
3. Norges Bank (`https://www.norges-bank.no`)
4. Bank of England (`https://www.bankofengland.co.uk`)
5. Bank of Ireland (`https://www.centralbank.ie`)
6. People's Bank of China (`https://www.pbc.gov.cn`)
7. European Central Bank (`https://www.ecb.europa.eu`)
8. Federal Reserve (`https://www.federalreserve.gov`)
9. Banco Central do Brasil (`https://www.bcb.gov.br`)
10. Banco Central de la República Argentina (`https://www.bcra.gob.ar`)
11. South African Reserve Bank (`https://www.resbank.co.za`)
12. Reserve Bank of Zimbabwe (`https://www.rbz.co.zw`)
13. Bank Indonesia (`https://www.bi.go.id`)
14. Central Bank of Russian Federation (`https://www.cbr.ru`)

The End

Ghosh's equation

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe Ghosh's equation.

Introduction

Ghosh's equation is the holy grail of analysis. In this paper, I describe Ghosh's equation.

Ghosh's equation

Ghosh's equation is

$$x = a \log(x) + b + c \exp(x)$$

The End

14 small solutions to Ghosh's equation

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe 14 small solutions to Ghosh's equation.

Introduction

In a previous paper, I've described Ghosh's equation. In this paper, I describe 14 small solutions to Ghosh's equation.

14 small solutions to Ghosh's equation

14 small solutions (a, b, c, x) to Ghosh's equation are given by

1. $(3, \frac{3}{34}, \frac{31}{34e}, 1)$
2. $(\frac{1}{12}, \frac{9}{53}, \frac{1164-53\log(2)}{636e^2}, 2)$
3. $(\frac{3}{37}, \frac{9}{35}, -\frac{3(35\log(3)-1184)}{1295e^3}, 3)$
4. $(\frac{1}{12}, \frac{1}{3}, \frac{22-\log(2)}{6e^4}, 4)$
5. $(\frac{1}{11}, \frac{3}{7}, \frac{352-7\log(5)}{77e^5}, 5)$
6. $(\frac{3}{31}, \frac{1}{2}, \frac{341-6\log(2)-6\log(3)}{62e^6}, 6)$
7. $(\frac{3}{29}, \frac{3}{5}, \frac{928-15\log(7)}{145e^7}, 7)$
8. $(\frac{1}{9}, \frac{9}{14}, \frac{309-14\log(2)}{42e^8}, 8)$
9. $(\frac{3}{25}, \frac{3}{4}, -\frac{3(8\log(3)-275)}{100e^9}, 9)$
10. $(\frac{1}{8}, \frac{9}{11}, \frac{808-11\log(2)-11\log(5)}{88e^{10}}, 10)$
11. $(\frac{3}{23}, \frac{9}{10}, \frac{2323-30\log(11)}{230e^{11}}, 11)$
12. $(\frac{1}{7}, 1, \frac{77-2\log(2)-\log(3)}{7e^{12}}, 12)$
13. $(\frac{3}{20}, 1, -\frac{3(\log(13)-80)}{20e^{13}}, 13)$
14. $(\frac{3}{20}, \frac{9}{8}, \frac{515-6\log(2)-6\log(7)}{40e^{14}}, 14)$

The End

A first-order solution to Ghosh's equation

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe the first-order solution to Ghosh's equation.

Introduction

In a previous paper, I've described Ghosh's equation. In a previous paper, I've described 14 small solutions to Ghosh's equation. In this paper, I describe the first-order solution to Ghosh's equation.

The first-order solution to Ghosh's equation

We take the Taylor series expansion about a = 0, b = 0, c = 0 and x = 0 to the first order to obtain

$$x = b + c(1 + x) + a\log(x)$$

which can be solved to obtain

$$x = \frac{aW(\frac{(c-1)e^{-\frac{b}{a}-\frac{c}{a}}}{a})}{c-1}$$

where

$W(x)$ is the ProductLog function that gives the principal solution for w in $x = we^w$

The End

Second-order solutions to Ghosh's equation

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe the second-order solutions to Ghosh's equation.

Introduction

In a previous paper, I've described Ghosh's equation. In a previous paper, I've described 14 small solutions to Ghosh's equation. In this paper, I describe the second-order solutions to Ghosh's equation.

The second-order solutions to Ghosh's equation

We use the substitution

$$x = 1 + y$$

to obtain

$$1 + y = a\log(1+y) + b + c\exp(1+y)$$

We take the Taylor series expansion about $a = 0$, $b = 0$, $c = 0$, $y = 0$ to the second order to obtain

$$1 + y = \frac{1}{2}y^2(ec - a) + y(a + ec) + b + ec$$

which can be solved and back-substituted into to obtain

$$x = -\frac{1 - 2a + \sqrt{1 + a^2 - ce(2b + ce) + 2a(-2 + b + 2ce)}}{a - ce}$$

and

$$x = \frac{-1 + 2a + \sqrt{1 + a^2 - ce(2b + ce) + 2a(-2 + b + 2ce)}}{a - ce}$$

The End

Differential solutions to Ghosh's equation

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe the differential solutions to Ghosh's equation.

Introduction

In a previous paper, I've described Ghosh's equation. In a previous paper, I've described 14 small solutions to Ghosh's equation. In this paper, I describe the differential solutions to Ghosh's equation.

The differential solutions to Ghosh's equation

We differentiate with respect to x to obtain

$$1 = \frac{a}{x} + ce^x$$

We differentiate with respect to x again to obtain

$$0 = ce^x - \frac{a}{x^2}$$

which can be solved to obtain

$$x = 2W(-\frac{a\sqrt{\frac{c}{a}}}{2c})$$

and

$$x = 2W(\frac{a\sqrt{\frac{c}{a}}}{2c})$$

where

$W(x)$ is the ProductLog function that gives the principal solution for w in $x = we^w$

The End