IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 2, July 2023

Observations On Homogeneous Bi-quadratic Equation with Five unknowns

$$(x^4 - y^4) + 2(x-y)(x^3 + y^3) = 36(z^2 - w^2)p^2$$

J. Shanthi[1] and M. A. Gopalan[2]
Assistant Professor, Department of Mathematics[1]
Professor, Department of Mathematics
Shrimati Indira Gandhi College, Trichy, Tamil Nadu, India
Affiliated to Bharathidasan University, Trichy,Tamil Nadu,India
shanthivishvaa@gmail.com [1]and mayilgopalan@gmail.com[2]

Abstract: In this paper ,we present non-zero integer solutions to homogeneous quinary bi- quadratic equation $(x^4 - y^4) + 2(x-y)(x^3 + y^3) = 36(z^2 - w^2)p^2$

Keywords: homogeneous bi-quadratic ,quinary bi-quadratic, integer solutions

REFERENCES

[1]. M.A. Gopalan, V. Pandichelvi On the Solutions of the Biquadratic equation $(x^2 - y^2)^2 = (z^2 - 1)^2 + w^4$ paper presented in the *international conference on Mathematical Methods and Computation,* Jamal Mohammed College, Tiruchirappalli, July 24-25, 2009.

[2]. M.A. Gopalan, P. Shanmuganandham, On the biquadratic equation $x^4 + y^4 + z^4 = 2w^4$, *Impact J.Sci tech*;.4(4), (2010). 111-115.

[3]. M.A. Gopalan, G. Sangeetha, Integral solutions of Non-homogeneous Quadratic equation $x^4 - y^4 = (2\alpha^2 + 2\alpha + 1)(z^2 - w^2)$, *Impact J.Sci Tech*; 4(3), (2010). 15-21.

[4]. M.A. Gopalan, R. Padma, Integral solution of Non-homogeneous Quadratic equation $x^4 - y^4 = z^2 - w^2$, *Antarctica J. Math*., **7**(4), 2010, 371-377.

[5]. M.A. Gopalan, P. Shanmuganandham, On the Biquadratic Equation $x^4 + y^4 + (x+y)z^3 = 2(k^2 + 3)^{2n} w^4$, *Bessel J. Math*., **2**(2), (2012), 87-91.

[6]. M.A. Gopalan, S. Vidhyalakshmi, K. Lakshmi, On the bi-quadratic equation with four unknowns $x^2 + xy + y^2 = (z^2 + zw + w^2)^2$, IJPAMS, 5 (1), (2012) ,73-77.

[7]. M.A. Gopalan, B. Sivakami, Integral solutions of Quadratic equation with four unknowns $x^3 + y^3 + z^3 = 3xyz + 2(x+y)w^3$, *Antartica J. Math*., **10** (2), , 2013, 151-159.

[8]. M.A. Gopalan, S. Vidhyalakshmi, A. Kavitha, Integral solutions to the bi-quadratic equation with four unknowns $(x + y + z + w)^2 = xyzw + 1$, *IOSR*.**7**(4), (2013). 11-13.

[9]. K. Meena, S. Vidhyalakshmi, M.A. Gopalan, S. Aarthy Thangam, On the bi-quadratic equation with four unknowns $x^3 + y^3 = 39zw^3$, *International Journal of Engineering Research Online*, **2**(1) , 2014. 57-60.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 2, July 2023

[10]. M.A. Gopalan, V. Sangeetha, Manju Somanath, Integer solutions of non-homogeneous biquadratic equation with four unknowns $4(x^3 - y^3) = 31(k^2 + 3s^2)zw^2$, *Jamal Academic Research Journal, Special Issue*, , (2015) , 296-299.

[11]. A.Vijayasankar, Sharadha Kumar, M.A.Gopalan, "On the Non-Homogeneous Bi-Quadratic Equation with Four Unknowns $8xy + 5z^2 = 5w^4$ ", *Jouranl of Xi'an University of architecture & Technology,* **12**(2),(2020), 1108-1115.

[12]. S. Vidhyalakshmi, T. Mahalakshmi, M.A. Gopalan, A Search for Integral solutions to the Ternary Bi-Quadratic Equation $x^4 + x^3y + x^2y^2 + xy^3 + y^4 = (x+y)^2 + 1 + z^2$, *Turkish Journal of Computer and Mathematics Education*, **12** (7), (2021), 484-495.

[13]. S.Vidhyalakshmi, M.A.Gopalan, On Finding integer solutions to Non-Homogeneous Ternary Bi-Quadratic Equation $3(x^2 + y^2) - 2xy = 11z^4$, *International journal of Novel Research in Physics, Chemistry and Mathematics* , **9** (2), (2022), 23-28.

[14]. S. Vidhyalakshmi, M.A. Gopalan, On the Non-Homogeneous Ternary Bi-Quadratic $xz(x+z) = 2y^4$, *International Research Publication and* Reviews, **3**, (2022), 3465-3469.

[15]. S.Vidhyalakshmi, M.A. Gopalan, On the Non-Homogeneous Ternary Bi-Quadratic equation $8xz(x+z) = 15y^4$, *International Research Journal of Moderization in Engineering Technology and Science (IRJMETS)*, **04** (07), (2022), 3623-3625.

[16]. S. Vidhyalakshmi, M.A. Gopalan, On the Non-Homogeneous Ternary Bi-Quadratic equation $xz(x-z) = y^4$, *International Research Journal of Education and Technology*, **04** (07), (2022), 232-237.

[17]. S. Vidhyalakshmi, M.A. Gopalan, On Non-Homogeneous Ternary Bi-Quadratic Equation $11(x+y)^2 = 4(xy + 11z^4)$, *Journal of Multidisciplinary Engineering Science and Research (JMESR)*,**1** (1), (2022), 8-10.

[18]. S. Vidhyalakshmi, M.A. Gopalan, On finding integer solutions to Non-Homogeneous Ternary Bi-Quadratic equation $x^2 + 3y^2 = 31z^4$, *International Journal of Multidisciplinary Research and Growth Evaluation*, **03** (04), (2022), 319-327.

[19]. S. Vidhyalakshmi, M.A. Gopalan, On Non-Homogeneous Ternary Bi-Quadratic Equation $4xz(x+z) = 5y^4$, *International Journal of Research Publication and Reviews,* **03** (08), (2022), 443-447.

[20]. S. Vidhyalakshmi, M.A. Gopalan, On Non-Homogeneous Ternary Bi-Quadratic Equation $5(x^2 - y^2) + 2(x+y) = 12z^4$, *International Research Journal of Moderlization in Engineering Technology and Science*, **04**(08), (2022), 425-429.

[21]. S. Vidhyalakshmi, M.A. Gopalan, On Non-Homogeneous Ternary Bi-Quadratic Equation $2xz(x-z) = y^4$, *International Journal of Research publication and Rewiews*, **03** (08), (2022), 187-192.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 2, July 2023

[22]. S. Vidhyalakshmi, M.A. Gopalan, On finding integer solution to Non-Homogeneous Ternary Bi-Quadratic equation $5(x^2+y^2)-2xy=140z^4$, *International Journal of Engineering Inventions*, **11** (08), (2022), 01-04.

[23]. S. Mallika, S. Vidhyalakshmi, M.A. Gopalan, On finding integer solution to Non-Homogeneous Ternary Bi-Quadratic equation $2(x^2+y^2)-xy=57z^4$, *International Research Journal of Education and Technology (IRJET)*, **05** (01), (2022), 63-72.

[24]. S. Vidhyalakshmi, T. Mahalakshmi, M.A. Gopalan, Observations On Non-homogeneous Bi-quadratic with Four unknowns $10xy+7z^2=7w^4$, Science, Technology and Development Journal, **IX** (III), (2020), 14-18.

[25]. S. Vidhyalakshmi, T. Mahalakshmi, B. Loganayagi, M.A. Gopalan, The Non-homogeneous Biquadratic Equation with Four Unknowns $xy(x+y)+30zw^3=0$, *Stochastic Modeling & Applications,* **25**, 3, Special Issue 4, Part-3, (2021), 1992-1998.

[26]. S. Mallika, V. Praba, T. Mahalakshmi, Observations On Homogeneous Bi-Quadratic Equation with Five unknowns $x^4-y^4=26(z^2-w^2)T^2$ *Alochana Chakra Journal*, **IX** (V), (2020), 4421-4431.

[27]. S. Vidhyalakshmi, J. Shanthi, M.A. Gopalan, Observation on the Non-Homogeneous Biquadratic Equation with five unknowns $(x^4-y^4)=10(z+w)p^2$, *Vidyabharati International Interdisciplinary Research Journal*, Special Issue on Recent Research Trends in Management, Science and Technology, (2021), 1048-1053.

[28]. S.Vidhyalakshmi, M.A.Gopalan, On Homogeneous Bi-Quadratic Diophantine Equations with Five Unknowns $x^4-y^4=5^{2n}(z^2-w^2)T^2$, *International Journal of Engineering Inventions*, **11**(3), (2022), 293-298.

[29]. S. Vidhyalakshmi, M.A. Gopalan, On Homogeneous Bi-Quadratic Diophantine Equation with five unknowns $2(x-y)(x^3+y^3)=4^{2n}(z^2-w^2)T^2$, *International Journal of Advanced Multidisciplinary Research and Studies*, **2**(4), (2022), 452-456.

[30]. S. Vidhyalakshmi, M.A. Gopalan, Observation On Homogeneous Bi-Quadratic with four unknowns $10xy+9z^2=9w^4$, *Journal of Research in Multidisciplinary methods and applications*, **01** (05), (2022), 01220105002-1,0122015002-5.

[31]. S. Vidhyalakshmi, M.A. Gopalan, On finding general form of Integral solution to the Quinary Homogeneous Bi Quadratic equation $(x+y)(x^3+y^3)=\alpha(z^2-w^2)\rho^2$, *International journal of Research publication and Reviews*, **03** (09), (2022), 1360-1363.

[32]. S.Mallika ,M.A.Gopalan ,Observations on Homogeneous Bi-quadratic Equation with Five Unknowns $(x^4-y^4)+2(x-y)(x^3+y^3)=36(z^2-w^2)p^2$, IJRPR ,4(3) ,4239-4246 ,2023