Old Calculus Texts, Stokes' Theorem, etc.

The following is a list of sources collected over the past couple of years. The first section is an attempt to look at the oldest calculus textbooks with links when available. Other sections relate to topics that have come up needing a trail of sources to answer some question related to origins of some topics. At the end is a collection of references.

Contents

Calculus Textbooks

- (Cajori 1919) A history of fluxions. online. This has a list of early publications on fluxions. Also, Guicciardini et al. 2019 discusses the reception of Newton's Method of Series and Fluxions. online. There is an Online Books Page for Calculus before 1800 and Guicciardini (1989), *The development of Newtonian calculus in Britain 1700-1800*. See list in Section
- Isaac Newton (1642–1727)
  - Newton (1693), *Tractatus de quadratura curvarum*, published in Newton (1704) *Optiks*.
  - Newton (1686) *Philosophiæ naturalis principia mathematica*.
  - 1671 *The Method of Fluxions and Infinite Series; with its Applications to the Geometry of Curved-Lines* published Newton and Colson (1736), Google Books.
  - 1711 *Analysis per quantitatum series, fluxiones, ac differentias* online, Mathematical Treasures.
  - Newton classification of differential equations in terms of fluxions and fluents.

  - Guicciardini (1999), Reading the *Principia*, Guicciardini 2022, and David Gregory's Manuscript 'Isaaci Neutoni Methodus Fluxionum' (1694).

- Gottfried Wilhelm Leibniz (1646-1716)
  - Leibniz (1684) was first publication on calculus in *Acta Eruditorum*. online and a translation. Here he also gives his version of Debeaune's problem.
  - Leibniz 1686, online, translation.
  - See also Roero (2005), Leibniz's first three papers on the calculus (1684, 1686, 1693), online.
  - Leibniz (1920) papers, translated by Child, are online and here. See GoogleBooks. Also, Child (1916, 1917) reviews the early papers in Part I, 1916 and Part II, 1917.

- Jacob and Johann Bernoulli - 1680s
  - Bernoulli Volumes
  - Bernoulli and Ferguson (2004) Lectures on The Integral Calculus, Johann Bernoulli, online. Also, check Bos (2023) on tractional motion.
  - Jacob Bernoulli, teacher and rival ...
  - Selected Letters from the Correspondence Between the Marquis de L'Hôpital and Johann Bernoulli

- l'Hôpital (1696) - The first differential calculus textbook, *Analyse des Infiniment Petits, Pour l'intelligence des lignes courbes* (Analysis of the infinitely small to understand curved lines), was written by Guillaume François Marquis de Hôpital (1661-1704) (l'Hôpital 1696). Other editions appeared posthumously from 1716 to 1781. Online version and (Stone 1730) online translation Wikipedia summary. He was a gardener (or son of the gardner) of John Campbell, 2nd Duke of Argyll (1680-1743).

- Carré (1700) - Louis Carré (1663-1711) published the first French book on the integral calculus. online.

- Harris (1702) - *A New Short Treatise of Algebra.* John Harris (1666-1719) wrote twenty pages devoted to fluxions. This was the first introduction to fluxions. See "An Introduction to the Doctrine of Fluxions" (2003) and Guicciardini (1989).

- Harris (1704) - In *Lexicon Technicum: or, an Universal English Dictionary of Arts and Sciences* see the Fluxion entry. Huge scientific dictionary in two volumes including articles on series, algebraic equations, trigonometry and conics. In the second volume (1710) was an English translation of Newton's *De quadratura* (Newton 1693) as *Quadrature of curves.*

- Hayes (1704) - Charles Hayes (1678-1760) wrote the first English text on Newton's method of fluxions, *A Treatise of Fluxions* online, dedicated to the Director of the Royal African Company.

- Manfredi (1707) - Gabriele Manfredi (1681-1761) published first book on differential equations.

- Reyneau (1708) - Charles René Reyneau (1656-1728) wrote a text to provide instruction in the new mathematics developed at the beginning of the 18th century, *Analyse démontrée, ou la Méthode de résoudre les problèmes des mathématiques, et d'apprendre facilement ces sciences...*, Volume I, Volume II - Second Edition, (Reyneau 1738). Other volumes at HathiTrust

- Reyneau (1714) - He wrote a lesser known two volume work, *La science du calcul des grandeurs en général, ou les élémens des mathématiques* online, Second Edition, 1739. Other volumes at HathiTrust

- Varignon (1725), *Eclaircissemens sur l'Analyse des infiniment petits* online is a "Collection of meditations and research by Mr. Varignon on the Analysis of the Infinitely Small by the Marquis de l'Hôpital" published three years after his death. See story about Pierre Varignon (1654–1722).

- Simpson (1737) - Thomas Simpson (1710-1761) *A New Treatise of Fluxions* online. Also, Simpson (1750) expanded this to *The doctrine and application of fluxions.* online. More at HathiTrust

- Deidier and Deidier (1740) - L'Abbé Deidier (1698 1746), *Le calcul différentiel et le calcul intégral: expliqués et appliqués à la géométrie*

- La Caille (1741) - Nicolas-Louis de La Caille (1713 - 1762), *Leçons élémentaires de mathématiques, ou, Elemens d'algebre et de géométrie*, 1772 Edition, has had a small section (pgs. 264-277) on differential and integral calculus since 1756.

- Maclaurin (1742) - Colin Maclaurin (1698-1746) wrote a two volume work, *A Treatise of Fluxions,* online and 1801 Edition.

- Agnesi (1748)- Maria Agnesi (1718-1799) wrote *Instituzioni analitche ad uso della gioventu italiana (Foundations of Analysis for the Use of Italian Youth)* online. See Mathematical Treasures Mingari Scarpello and Ritelli (2019) notes that more than 200 pages are devoted to solving differential equations.

- Euler (1748) - Leonhard Euler (1707-1783), *Introductio in analysin infinitorum*, online and translation by Ian Bruce.

- Bougainville et al. (1754) - Louis-Antoine de Bougainville (1729-1811), according to MacTutor, was"influenced by d'Alembert and he wrote *Traité du calcul -intégral* in 1752, See Google Books or Gallica. This extended de l'Hôpital's book ... to cover the integral calculus." De Bougainville et al. 1754. This was noted at David Zitarelli's site, based on Struik (1956) [See article], that he was one of four mathematicians at Ticonderoga. Struik (1956) noted that ". In 1756 ... the second volume of the integral calculus appeared, probably the first book exclusively devoted to differential equations."online.

- Euler (1755) - *Institutiones calculi differentialis*, online and translation by Ian Bruce.

- Euler (1768) - *Institutiones calculi integrals volumen-Primum*, Vol I, online. A three-volume textbook on integral calculus and contained many of Euler's discoveries about differential equations. translation by Ian Bruce.

- Waring (1770) - Edward Waring (1736-1798) wrote *Meditationes Analyticæ* online, as an expansion of part of Waring (1762), *Miscellanea Analytica*, which was on the theory of numbers and algebraic equations, online.

- Cousin (1777) - Jacques Antoine Joseph Cousin (1739-1800), *Leçons de calcul différentiel et de calcul intégral*, online. He provides an interesting history. Google.

- Bézout 1764 - *Cours de mathématiques, à l'usage du corps de l'artillerie ...: à l'usage du corps de l'artillerie* by Étienne Bézout (1730-1783) Vol. 1, Vol. 2, Vol. 3 is on calculus. Domingues (2004) mentions the use of Bezout (1774) in Portugal as well as other writings, online.

- Cunha (1790) - *Principios Mathematicos*, a 21 part encyclopedia of mathematics in Portuguese by José Anastácio da Cunha (1744-1787), online. Cunha (1811), *Principes Mathématiques*, was a French translation by João Manuel d'Abreu (1757–1815), online. For more see Domingues (2004).

- Lacroix (1797) - 1797-1800 - *Traité du Calcul Différentiel et du Calcul Intégral*, Volume 1, Volume 2, Volume 3. "... the most comprehensive work of its kind for that time."
- Lacroix (1802) - Sylvestre François Lacroix (1765-1843), *Traité élémentaire de calcul différentiel et de calcul intégral* Hathi Trust online.
- Ivory, James (1809) In papers 1809–1824, he was the first to use continental analytical techniques, 'The Most Unlucky Person That Ever Existed', Craik (2000) online and his Obituary
- Hirsch (1810) - Meier (Meyer) gave a set of integral tables and methods, *Integraltafeln: Oder, Sammlung Von Integralformeln,* online. An English translation, Hirsch (1823) *Integral Tables: Or, A Collection of Integral Formulas*, can be found online.
- Other Early Integral Tables
  - Newton (1671) had tables in his work, *The Method of Fluxions and Infinite Series; with its Applications to the Geometry of Curved-Lines* published Newton and Colson (1736).
  - Legendre (1811) - Adrien Marie Legendre (1752-1833) wrote several volumes on Tables of Elliptic functions, Gallica. These did not serve the same purpose as Hirsh's tables.
  - Peirce (1902) - Benjamin Osgood Peirce (1854-1914) gave a short table of integrals 1910, 2nd ed. A 1903 version is online, and Google shows the earlier edition, (Peirce 1893). Byerly (1889) includes an 1889 edition of Peirce's tables which is online. This is a later edition of Byerly's 1882 text, (Byerly 1881).
  - De Haan (1858) published *Tables d'intégrales définies*, online and 1867 version, supplemented by *Supplément aux tables d'intégrales définies* in 1864 online. The supplement gave references to where integrals were found.
  - Abramowitz and Stegun (1948), *Handbook of Mathematical Functions ...* , Google, 1964
- Dealtry (1816) - William Dealtry, (1775-1847), *The Principles of Fluxions*, online.
- Lacroix (1816) - *An Elementary Treatise on the Differential and Integral Calculus*, Lacroix translation, 1816. online. from 1797 online. First English edition, responsible for the introduction of Continental methods of analysis and notation. Herschel, Babbage and Peacock translated and edited it.
- Jephson (1826), *The Fluxional Calculus: An Elementary Treatise* blends Lagrangian and Newtonian methods. Volume 1, and Jephson (1830) Volume 2 He might be the Thomas Jephson at https://www.wikitree.com/wiki/Jephson-257 or in the trial. Also mentioned at Bidder Bio.
- Boucharlat (1820) - Jean-Louis Boucharlat (1775-1848) was the second edition, online. Boucharlat (1828) was a translation into English by Ralph Blakelock found here. Alcouffe (2020) provides a little more on the history of the text and use by Marx. Open Source Access. Another mention of the first edition being in 1813 was by Zerner (1989), This paper is in French and notes "the elementary treatise of Lacroix (1802) and the elements of Boucharlat (1813) were republished until 1881 and 1891, respectively, having each had nine editions."
- (De Morgan 1836) *The Differential and Integral Calculus*, by Augustus De Morgan (1806-1871), online. and (De Morgan 1842) The differential and integral calculus, containing ... online.
- Ottley (1838), William Campbell Ottley (1808–1843), *A Treatise on the Differential Calculus: With a Collection of Examples*, online. Autographed Note.

- Ritchie (1836) William Ritchie (1790-1837), *Principles of the Differential and Integral Calculus*,online and Joseph Anthony Spencer edited the 2nd ed., online, Ritchie and Spencer (1847). Possibly (1823-1873) link to genealogy.

- Woolhouse (1854), Wesley Stoker Barker Woolhouse (1809-1893), *Elements of the Differential Calculus*, online.

- Charles Davies (1855) first commercially successful book by an American author online, described by (Rickey and Shell-Gellasch 2010), Introduction to America at West Point. There is also Davies (1838) edition. here and a second edition here.

- Duhamel (1856) wrote a two volume French calculus text of all most a thousand pages in four parts. The first three chapters are in Volume 1 (585 pgs.) The second volume is on differential equations (375 pgs.). See the online two volume set.

  1. Des Quantités Considérées Comme Limites.
  2. Calcul Des Dérivées et des Différentielles des Fonctions. Calcul Inverse Où Intégration des Différentielles.
  3. Des Limites de Sommes. Calcul Inverse du Calcul Differentiel.
  4. Intégration des Équations Différentielles.

  At EUDML Vol 1, (1860) Vol 2, (1861). Second Volume (1856) is also at Gallica. Still might need to check Dhombres (1985) about

- *A Treatise on the Integral Calculus*, by I Todhunter, 1863. Has spherical polar coordinates! Pg 225 online.

- (Todhunter 1864)*A Treatise on the Differential Calculus and the Elements of the Integral Calculus: With Numerous Examples*, Todhunter, 1863, online, 1868

- (Todhunter 1873) *A History of the Mathematical Theories of Attraction and the Figure of the Earth from the Time of Newton to that of Laplace.* Volume 2, Todhunter, 1873. Attributes to Legendre form of spherical coords. online.

- Byerly (1879) - William Elwood Byerly (1849–1935) wrote *Elements of the differential calculus, with examples and applications*, online.

- Byerly (1881) - William Elwood Byerly (1849–1935) wrote *Elements of the integral calculus*, online. Later revised as (Byerly 1889), which includes an 1889 edition of Peirce's tables. [See earlier.] (Greenhill 1896) *Differential and Integral Calculus, with Applications*, by Greenhill, G. (George), Sir, 1886. online.

- (Newcomb 1887)*Elements of Differential and Integral Calculus*, by Newcomb, Simon, 1887. online.

- Greenhill 2nd ed, 1891 online. Has spherical polar coordinates!

- (McMahon and Snyder 1898)*Elements of the Differential Calculus*, by McMahon, James, and Snyder, Virgil, 1898 online.

- (Lamb 1924) *An Elementary Course of Infinitesimal Calculus*, by Lamb, Horace, Sir, 1897. online.

- *An Elementary Treatise on the Integral Calculus*, by Johnson, William Woolsey, 1898. online. Page 168-9 Spherical (polar coordinates in space) Uses rho! Pg 168

- (De Morgan 1909) *Elementary Illustrations of the Differential and Integral Calculus*, by De Morgan, Augustus, 1899, online. This was a reprint of (earlier) 1842 bound version of two volume set from numbers 135 and 140 of the Library of Useful Knowledge (1832).
- Edmond Maillet's Notes: 1910-11, 1913-14
- (Townsend and Goodenough 1910) *Essentials of Calculus* by Townsend, Edgar Jerome, Goodenough, George Alfred, pg 265 uses rho online. - Cajori's copy
- Edwards (1921, 1922) *A Treatise On The Integral Calculus* Vol. I, Vol. II, and here. Edwards (1886) *Differential Calculus with Applications and Numerous Examples: An Elementary Treatise...* Edwards (1893), *Differential Calculus for Beginners,* online. Theorems of Stokes and Green. Harmonic Analysis - Chapter XXXIX.

Early Differential Equations

- Newton classification of differential equations in terms of fluxions and fluents.
- Debeaune problem
  - Johannes Bernoulli to L'Hôpital on Debeaune problem.
  - Inverse tangent project.
  - Correspondence with Descartes.
  - Pedersen (1978) Bartholin and the Debeaune problem.
  - L'Hôspital's rectification of Debeaune's curve, Ferreira (2011), online.
  - Scriba (1961), Debeauneschen Problems durch Descartes, JSTOR.
- Bittanti (1996), History of Riccati equation. online.
- Duhamel (1856) wrote a two volume French calculus text of all most a thousand pages in four parts. The second volume is on differential equations (375 pgs.). See the online two volume set.
- Boole's Differential Equations (Boole 1872) Treatise, 1872, 3rd Ed. and First Edition, 1859. "Symbolical methods" in the last chapters. Has exercises.

Stokes Theorem and Vector Analysis

- (Stokes 1905) online Mathematical And Physical Papers, Vol. 5. Includes Obituary by Lord Rayleigh.
- Stokes' Theorem. References to the Smith Prize question, 1854. (Stokes 1905), page 320-1. A footnote there tries to explain why Stokes should be credited with the theorem.
  - References were made in 1912 Edition, pg 143 of Thomson and Tait pg 124 Section 190 (j). (Kelvin and Tait 1867)
  - In 1912 edition, page 167 is Appendix A - Extension of Green's Theorem.
  - Thomson (1868) on vortex motion.

  - He references Helmholtz (Helmholtz 1858, 1867) online
  - According to (Maxwell 1873) pg 26, Section 24,
    "This theorem was given by Professor Stokes. Smith's Prize Examination, 1854, question 8. It is proved in Thomson and Tait's Natural Philosophy, § 190 (f)." 1873 Ed. Note: Maxwell sat for the Smith Prize in 1854 and took first place with Edward Routh.
  - Link to the 1850 letter from Thomson to Stokes: link .

- Maxwell's 1873 Edition - link mentions Stokes Smith's Prize question. He also uses nabla on that page. On the next page he discusses convergence (opposite of divergence) and uses word curl. "I propose (with great diffidence) to call the vector part of ... the curl." He is still trying to rewrite his theory using quaternions and credits Tait with notation referencing his paper, "On Green's and other allied Theorems", at link . Tait credits that Stokes' Theorem was "first given by Thomson (Thomson & Tait'S 'Natural Philosophy,' § 190 (j); Thomson on Vortex Motion, Trans. R.S.E., 1868-9,Sec 60 (q)." Even Thomson does not claim it in a later edition of their book. link to (Knott 1911).

- (Katz 1979) *The History of Stokes' Theorem*, Victor J. Katz, JSTOR, mentions textbooks.

- (Tait 1870) relates Stokes' Theorem to Green's Theorem using quaternions and the ∇ operator. Also in (Tait 1898), the first volume of Tait's collection of papers, online.

- In letters between Tait and Maxwell there is a discussion as to what to call certain vector operators. You can find this on page 143 and the following of https://www.maths.ed.ac.uk/~v1ranick/papers/taitbio.pdf.

- (Gibbs 1884) *Elements of Vector Analysis*, Gibbs, 1881-4 notes. online.

- (Wilson and Gibbs 1901) *Vector Analysis*, Gibbs and Wilson, 1901, Gives Theorems of Gauss, Stokes and Green. online.. Gibbs defense online.

- (Bucherer 1904) Elemente der Vektor-Analyse by A. H Bucherer. 1903 Edition, online.

  A 1904 review by Henry Crew (Crew 1904), online. - Has derivations of Gauss, Stokes, Greens Theorems.

- (August 1894) Einführung in die Maxwell'sche Theorie der Elektricität: Mit einem, August Föppl 1894. Lists integral theorems in appendix. online.

- (Coffin 1911) *Vector Analysis: an introduction to vector-methods and their various applications to physics and mathematics,* 1911, online

- Other references:
  - (Katz 1979), *The History of Stokes' Theorem*,
  - (Markvorsen 2008), *The Classical Version of Stokes' Theorem Revisited*,
  - (Crowe 1967), *A History of Vector Analysis*.

- (Stokes 1847), On the theory of oscillatory waves, *Trans. Cam. Philos. Soc.*, 8, 441–455

History of the Slide Rule and Logarithms

- John Napier (1550-1617), 8th Laird of Merchiston, married Elizabeth, daughter of James Stirling, the 4th Laird of Keir and of Cadder. [John is fourth cousin 15 times removed from author; wife is 13th great aunt of author and a distant cousin of James Stirling, the Venetian, who is a third cousin 11 times removed from author. Finally, James Stirling is the 2nd great grand nephew of Elizabeth Stirling, her mother being his third grat granmother.]
  - The Description of the Wonderful Canon of Logarithms, translation by Ian Bruce at http://www.17centurymaths.com/contents/napiercontents.html
  - The Construction of the Wonderful Canon of LOGARITHMS
  - Open University Course
  - 1889 translation Constructio
  - Hobson Lecture, 1914
- (Roegel 2010) *Bürgi's Progress Tabulen (1620)* online.
- Newton's Polynomial Solver - Mathematica Demo
- On the Evolution of K&E Vector Slide Rules paper at the Oughtred Society
- Otis King Calculator Manual.
- Quadrature of the Hyperbola and Circle
  - Crippa (2019) Leibniz's Arithmetical Quadrature of the Circle, online.
  - Edgar and Richeson (2019), Gregory's Theorem, online.
  - O'Hara (1996), Huygens, Leibniz and the 'petit demon', online.
- Hofmann (1939), On the Discovery of the Logarithmic Series ..., online.
- (Cajori 1908) *Notes on the History of the Slide Rule* online.
- Chamberlain (1999) *Long-Scale Slide Rules Revisited,* online.

Historical Topics to be Sorted

- Cotes (1722) *Harmonia Mensurarum.* Cotes (1714) was the first to note the identity $\ln\left(\cos\theta + \sqrt{-1}\sin\theta\right) = \sqrt{-1}\theta$. Although it was presented geometrically. Cajori 1913 [JSTOR] describes the history including when Euler (1748) printed his formula.
- Use of symbols - In 1800, Arbogast (1800) uses the operator D in his *Du calcul des dérivations* at Google Books. Other histories are found at Earliest Uses of Symbols of Calculus.
- Coolidge (1949) History of Binomial Theorem, online.
- Arithmetical books from the invention of printing to the present time, de Morgan, 1847, online.
- Airy 1896 Airy autobiography. online

- Fractional Calculus, book.
- Article: Who Gave You the Epsilon? Cauchy and the Origins of Rigorous Calculus?

  On the history of epsilontics, Sinkevich, 2015 and J. Polish Math Soc 2016.
- Partial Fraction Decomposition is investigated in Newberry (n.d.) with little history. Wikipedia states "Johann Bernoulli and Gottfried Leibniz independently discovered the concept in 1702." This seems to be noted in Laugwitz (1997) [JSTOR].

  Todhunter (1864) describes partial fractions in Chapter II.

  Sandifer (2007) decribes Euler's approach to partial fractions. " we get to chapter 18, the last chapter of the second part of *Calculi differentialis*, titled *De usu calculi differentialis in resolutione fractionum*, 'On the use of differential calculus in the resolution of fractions.' Translation. By this, Euler means what we now call 'partial fractions.' Euler (1748) introduced partial fractions in this masterpiece, *Introductio in analysin infinitorum,* 'Introduction to the analysis of the infinities,' [E101, E102]"
- (Ball 1889) *A History of the Study of Mathematics at Cambridge,* Ball. online.
- (Hamilton 1853) *Lectures on Quaternions: Containing a Systematic Statement of a New Mathematical Method* online
- *An Elementary Treatise on Quaternions,* P. G. Tait, 1890. online.
- (Wu and Yang 2006) *Evolution Of The Concept Of The Vector Potential In The Description Of Fundamental Interactions*, online.
- Sommerfeld, *Partial Differential Equations in Physics* online, 1949.
- (Grabiner 1997) Was Newton's Calculus a Dead End? online.
- History of Gaussian Integrals. Poisson (1834) evaluated $\int_{-\infty}^{\infty} e^{-x^2}\,dx = \sqrt{\pi}$ using the standard trick as seen in 1835 edition. Sturm (1859) references Poisson in 1859, online. Laplace used another method and people usually refer to (Gauss 1809), at Google Books or in English. Least Squares, or Method of Gauss is discussed in (Celmiņš 1998) highlighting dispute between Gauss and Laplace. Conrad (2016) gives some proofs in the paper. Also, see the History of Statistics page.

  Laplace's *Memoir on the Probability of the Causes of Events* is a translation (Laplace 1986), JSTOR of *Mémoire sur la probabilité de causes par les évenements* (Laplace 1774). Example is shown at YouTube.
- Moivre (1730) added to *Miscellanea Analytica* and supplement discussed in (Deming 1933) referencing (Pearson 1924), JSTOR ref. Archibald (1926) critiques Pearson's paper as to when deMoivre wrote on the probability integral. Then, Daw and Pearson (1972) continue the discussion as found in JSTOR.
- Sturm and Liouville (1837) work on differential equations. Lützen (1984) gives a history online
- Mathematics Genealogy
  - Math Genealogy Visualizer
  - hrefhttp://magjac.com/graphviz-visual-editor/Graphviz Visual Editor
  - My Math Genealogy
- Tikz Online

- Gallica - Isaac Barrow's Lectiones Geometricae (1669); which Morris Kline says is "one of the great contributions to the calculus".
- Important publications in mathematics.
- History of Teaching Calculus.
- Derivative Notation: Lagrange, Leibniz, Euler, and Newton: Video.
- Calculus Made Easy, by Silvanus Thompson.
- Cours De Mathématiques, A L'Usage Des Gardes Du Pavillon Et De La Marine Contenant Le Traité De Navigation, Volume 6, Étienne Bézout, 1769.
- Vincenzo Viviani and Leibniz
  - Roero 1990 - Leibniz and the Temple of Viviani online.
  - *L'intérêt intérnational d'un problème d'analyse proposé par V. Viviani*, 1988, Roero et al. (1988), online.
  - Lanier (1987) Leibniz, la nouvelle analyse et la géométrie ou enquête sur la fenêtre de Viviani, online.
  - Nature, Geoghegan (1888), online He refers to Lacroix.
  - Caddeo, Montaldo, Piu, et al. (2001), The Möbius strip and Viviani's windows, online.
- Francesco Siacci's Theorem
  - Based on papers by Siacci 1879b, 1879a. These can be found here and here
  - In E. T. Whittaker 1917, *A treatise on the analytical dynamics of particles and rigid bodies; with an introduction to the problem of three bodies.* is discussed Siacci's result on pages 21-22 in the Second Edition (1917) [See https://archive.org/details/treatisanalytdyn00whitrich/page/22/mode/2up.]
  - Casey (2011) gave a modern derivation.
- The recent paper on Siacci's Theorem mentions Rowell (1922b) as a curve rederived, online. This short note of June 03 in *Nature* was taken up on June 19 by Wright (1922), online. He mentioned that the result was already in Besant (1914), with no mention of the edition. On page 100, Section 91 of the 1893 second edition, 2nd Ed. online, Besant, William Henry, (1828-1917) considers, the *Motion of a particle in the same medium under the action of a force to a fixed point varying as the distance from that point.*

  On August 12, Rowell (1922a) noted, "it appears to have been recognised in connexion with the spherical pendulum. Prof. Lamb in his 'Dynamics,' p. 288, as I now find, refers to the curve as 'a kind of elliptic spiral,' and Dr. Besant describes it as 'an ellipse gradually shrinking in size."' He goes on to mention, "The problem of the spherical pendulum is identical with that of the motion of a particle in a spherical bowl" and proceeds to look at a spinning bowl. *Perhaps we need a list of textbooks on dynamics.*

  Lamb (1914) has a section on page 287 on the effect of friction on the small oscillations of the spherical pendulum (Art. 29)," online 1914. The spherical pendulum equations are given as

$$\begin{aligned} \frac{d^2x}{dt^2} + k\frac{dx}{dt} + \mu x &= 0. \\ \frac{d^2y}{dt^2} + k\frac{dy}{dt} + \mu y &= 0. \end{aligned} \tag{1}$$

With specific boundary conditions, he wrote the solution $x(t) = ae^{-kt/2}\cos nt, \quad y(t) = be^{-kt/2}\sin nt.$ Besant solves the same equations but has a more complicated shrinking ellipse due to different initial conditions.

- Pierce (1955) published a letter and responses Tchebycheff or Chebyshev? and responses. On the previous page, Papoulis (1955) discusses series of orthogonal polynomials.

Early Calculus Authors to be checked

- John Craig, De Moivre, David Gregory, Patio de Duillier, Cotes Ditton. Cheyne.
- John Harris, 1702, 1705, 1710
- Charles Hayts, 1704 .
- William Jones, 1706 .
- Humphry Ditton, 1706
- Commerciiim Epistolicum D. Johannis Collins, 1712
- Joseph Raphson, 1715
- Brook Taylor, 1715 .
- James Stirling, 1717, 1730 .
- Edmund Stone, 1730
- 1734 - Berkeley Critique
- John Colson, 1736
- James Hodgson, 1736
- Thomas Bayes, 1736
- John Muller, 1736
- Anonymous translation of Newton's Method of Fluxions, 1737
- James Smith, 1737
- Thomas Simpson, 1737
- Benjamin Martin, 1739, 1759
- An anonymous text, 1741
- John Rowe, 1741, 1757, 1767
- Maclaurin, "Treatise of Fluxions, 1742"
- John Stewart, 1745 ....

- William Emerson, 1743 (?), 1757, 1768
- Thomas Simpson, 1750
- Nicholas Saunderson, 1756
- John Rowning, 1756
- Israel Lyons, 1758
- William West, 1762
- James Wilson, 1761

References

Abramowitz, Milton, and Irene A Stegun. 1948. *Handbook of mathematical functions with formulas, graphs, and mathematical tables.* Vol. 55. US Government printing office.

Agnesi, Maria Gaetana. 1748. *Instituzioni analitiche ad uso della gioventu italiana.* Vol. 1. Nella Regia-ducal corte.

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