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| **Arithmetic Sequence**  {a, a + d, a + 2d +…}  **Geometric Sequence**  {a, ar, ar2, ar3, …}  **Infinite Geometric Series**  **Recurring Decimal: 0.345345345**  Let S = 0.345345345…  1000S = 345.345345345…  999S = 345  **Logarithm**    **Exponent**    **Integration By Parts**      Use for expressions including  **Area Under Curve**  **\*\* Look at domain given**  **1) x-axis**    Note: Area below x-axis |abs| to +    **2) y-axis**    Note: Area left of y-axis |abs| to +    \*\* Flip the y-axis to bottom to choose top curve  **Parametric Equation**      Gives you  **Intersecting and Skew Lines**  Lines can be:  1) Identical/Coincident  2) Parallel, not coincident:   1. Contradict 2. Direction vector scalar of each other   3) Intersecting (!parallel)   1. No contradiction   4) Skew Lines (!parallel & !intersect)   1. No contradiction 2. Not parallel   **Foot of Perpendicular/Projection**  *Eg. Find the position vector of the FOP from P to line = Find the shortest distance from P to line.*  1) Let FOP be Q  Point P  line  Q  2) should satisfy equation of line.  3) Find  4) Solve  5) Obtain [λ](https://en.wikipedia.org/wiki/Lambda#Lower-case_letter_%CE%BB) and sub in  **Planes in 3D**  where is any **u** of line on the plane.  Eqn:  **,**  where andare vectors // to plane  **Cartesian Equation**  →  **Special Angles**  **Trigo Identity** | **Generalised Binomial Theorem**  **Binomial Coefficient**  **f’(x) and f’’(x)**  f’ > 0 → increasing  f’ < 0 → decreasing  f’ = 0 → Stationary Point  f’ + to – → Local Max  f’ – to + → Local Min  f’ no change → Saddle Point  f’’ > 0 → Concave Up → Min Point  f’’ < 0 → Concave Down → Max Point  f’’ +/- to -/+ → Inflection Point  **Derivatives**    **Parametric Differentiation**  **Tangent Line**: of y = f(x) at x = a  Tangent // x-axis →  Tangent // y-axis →  **Normal Line**: of y = f(x) at x = a  **Volume of Solids of Revolution**  1) About x-axis/y = 0    2) About x = a  Note: replace a with any bottom curve  3) About y-axis/x = 0    4) About y = b  Note: replace b with any bottom curve  **ODE**  Leave answer in y = integrated.  1) Put y terms all together  2) Flip to  3) Leave answer in x = integrated.  1) Obtain  2) Leave answer in ln|y| = integrated  *Refer to chapter 3 notes last 2 pages for advanced examples.*  **Acute Angle**  1) Between Vectors      2) Between Planes    3) Between Line & Plane      **Line of Intersection of Two Planes**  **Line:**  1) Calculate and take out common factor out to obtain **u.**  Eg.  2) Take cartesian equation of the two planes and solve for unknown, subbing in z = 0 and obtaining x and y value. These values are the **.**  3) Sub into equation of line to solve.  **Degree &**  What is the standard form of an ellipse? - Quora        **Partial Fraction** | **Linear Approximation**  f  Eg Approximate  1) ,  2) Type out  3) So,  4) Sub into equation  **Integrals**        **Vectors**  Length = || = |**a**| =  Collinear: Lie on the same straight line and are parallel on all points.  **a** and **b** are // if **a** = [λ](https://en.wikipedia.org/wiki/Lambda#Lower-case_letter_%CE%BB)**b** for scalar [λ](https://en.wikipedia.org/wiki/Lambda#Lower-case_letter_%CE%BB)≠0  **Unit vector of magnitude 1:**    Note: is also //**a**  **Dot Product**  ^ If **a** and **b** perpendicular  **Cross Product**  **Area of Triangle ABC**    **Shortest Distance of A to BC**  **Lines in 3D**    Any point on the line should satisfy the vector equation of the line.  *Given A & B, find equation of line AB:*  1) Find = **v** (direction vector of line AB)  2) Sub in A OR B (as **a**) and **v** into equation  **Algebra II For Dummies Cheat Sheet - dummiesCommon Graphs**  Image result for volume and area of 3d shapes | Math methods, Geometry  formulas, Math formula chart**Shapes**  **Ellipse**  **Imaginary Number** =    **Rules of Derivatives**  Product Rule    Quotient Rule    Chain Rule    **Take Note:**  Angle leave in radian for differentiation and integration,  Partial Fractions 1Leave in degree for vectors. |