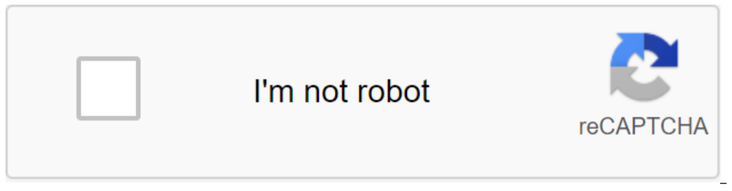

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All rights reserved - PURE MATHS -- STATISTICS© copyright©2013 A-levelmathstutor.com All Rights Reserved Midpoint Lines: Distance Between Two Points: Grade of Straight Line Line Equation 3 Forms: Gradient Intercept Form: Gradient Point Form: Two Form Point: As we know from THE geometry of GCSE, basically about how shapes, dots, lines all relate to each other. When we add coordinates to it, we basically describe the location of these shapes, points, or lines in space. The geometry of the coordinates is also known as Cartesian geometry. As shown in Figure 1, the position of the dot in the plane is given by a pair of numbers written as (x,y). They are called Cartesian coordinates. x and y measure the displacement of the point from two perpendicular axes (bull and oy) intersecting in o, where the o is the origin. Mid-segment line We know that the middle point of the line is basically the central point of this line. Typically defined as: If M is the middle point of the line, attaching to points A (x1, y1) and B (x2, y2), then its coordinates are: Example #1 z. Find the middle of the line in figure 2. Solution: Use the aforementioned formula and replace the x and y values to work out the middle of the A and B accession line. Put points A (2, 2) and B (5, 8) in the above equation: Ans: Ans: Distance between the two points We want to find the length of P, where P and q are given coordinates (4, 7) and (8, 15) respectively. Pythagorean theorem: From here: As: Gradient line As shown in Figure 4 to find the gradient (slope) of the straight line, we just divide the change in y by change in x between any two points on the line. In this case, points A and B. We know that the tilt of the straight line is always constant. The slope mainly characterizes the direction of the line. We find a gradient using the following formula: Gradient lines Remember these points: Note that it doesn't matter in two points A (x1, y1) and y2) are considered for calculations. If AB is parallel to the x axis, the gradient is 0. If AB is perpendicular to the x axis, the gradient is not defined. If AB with a gradient is parallel to the other line of THE with the gradient, the gradients are equal. If the two lines with the gradient and perpendicular to each other, the product of these gradients is -1. An example #2 K. Prove that the line and line are perpendicular to each other. Solution: Gradient line AB Gradient line CP How: So this proves that both lines are perpendicular to each other. Straight line equation Depending on these conditions, we can find different forms of direct line equation. (i) Equation of the form of interception of the line gradient with gradients m and y interception c: ii) The form of the gradient point If the line with the gradient M passes through the point (x1, y1), then its equation: iii) Equation of two points of the straight line passing through two points (x1,y1) and (x2, y2) is: AS LEVEL- 5 and 1 Gostu Compare-oh! 1. Mathematics Pure 1 (geometry coordination) email:racsostudenthelp@gmail.com 3. COODINATE GEOMETRY is the distance between two points - a gradient - is a numerical expression of how steep or gentle the slope or the rate of change is. The middle point is the middle point between the two points. -Consider the following graph, B (x2, y2) Y-axis (x2-x1) A (x1, y1) (x1, y2) X-Axis (y2-y1) - this is the distance of RACSO PRODUCTS Page 1 2. Mathematical Pure 1 (geometry coordination) email:racsostudenthelp@gmail.com Do you remember the Pythagoras theorem? If you want to find distance AB (hypotenuses)? The same idea used here is good for you to know, but not necessarily. Getting a distance from two currents, smear (吾2 - 吾1) 2 (晶2) 晶1)2, which can also be written as a smear No吾2 th晶2 means change and smear distance AB Given the gradient line, a) (b) (b) -Looking at the line (a) steeper than the line (b), this means that line A has a numerical greater gradient than the line (b), for the line (c) it has a zero gradient because it is horizontal. In mathematics, the gradient denotes m, referring to the graph from the previous page M - y2 - y1 x2- x1 -When the gradient of zero means horizontal -When the gradient is uncertain means that the line is vertical (when changing X No. 0, or X2 and X1 equal) RACSO PRODUCTS Page 2 3. Mathematics Pure 1 (coordinating geometry) email:racsostudenthelp@gmail.com (x1, y1) (x2, y2) Mid-Point Point No (x1 x2 2, y1 and y2 2) To find the line equation, you at least need a gradient and one paragraph two point OR RACSO PRODUCTS Page 3 4. Mathematics Pure 1 (geometry coordination) email:racsostudenthelp@gmail.com -IF GIVEN GRADIENT AND POINT Remember the following equation, y - y1 y m (x - Let's solve one issue together, for example, you are given a gradient line like 2 and dot (6, 7). So, y17, x1 and 6 and m2, you just have to connect the number to the equation and that's it. Then you will have the y equation - 7 and 2 (x - 6), and that's your answer. -You can write an equation in the form of y and mx c by opening brackets and making the subject, and the equation will have 2x - 5. (This will be discussed in detail later) -IF GIVEN TWO POINTS - If two paragraphs (coordinators) are given, you will first find the gradient, (please come back to find how to find the gradient if forgotten) when you find the gradient, choose any point from the two points. Connect x and y coordinates in this equation y - y1 and m(x - x1), as I explained above. RACSO PRODUCTS Page 4 5. Mathematical Pure 1 (geometry of coordinates) email:racsostudenthelp@gmail.com - If the two lines are parallel, it means that they have the same gradient, and when the two lines are perpendicular to each other, if I take the gradient of the 1st line, multiplied by the gradient of the 2nd line, it is equal to -1. Taking a gradient one like the M1 and the second line as M2 means (M1 x M2 - -1) - Looking at the chart (from CIE May/June 2007, issue 6) Line AD parallel to the B.C. line, but perpendicular to ab lines and DC lines. Below are the questions they

asked from this chart. RACSO PRODUCTS Page 5 6. Mathematical Pure 1 (coordinating geometry) email:racsostudenthelp@gmail.com - How to find the B.C. equation, I know I can get the AB equation, but how does that help me? Remember, when two lines are perpendicular, the product is their gradient (-1). When calculating the GRADIent of the AB line, it should reach 1.5 or 3/2. According to the formula (M1 x M2 - -1) , taking the ab line to be M1 and 1.5, then the gradient line B.C. (M2) - (-2/3). Now you have a gradient and one point on the B.C. line, which (-2, 8). Then find the equation, you can go back and see how to find the gradient If given the gradient and point. The answer is: How can we find co-ordinated C and D? I know the C coordinates are on the X-axis, that is, the value of y'0, so C (x, 0). But we have a B.C. line equation from the previous part. If you have an equation of any string, if I connect the value to any point on that line, I should get the corresponding X value of that particular point, and vice versa. I know I'm 0, plug y' 0. You have to get 10 HG. Coordination value C (10, 0). Then how can we find a coordinated D? There are two options, one gets the D.C. and AD line equation and their solutions simultaneously, but it will be a long work for only 3 points, I will introduce something very simple called a vector move. As I know, the distance to B.C. and BC is equal (since it is a rectangle). Then I know the transition from B (-2, 8) C (10.0) 12 is added to the x point B value to get x point C value, which is 10. (-2 No12 No10) and 8 from y point B to get y point C, (8 - 8 q0). We can do the same for point A to get point D, add 12 to x and subtract 8 from the value of y. A (2, 14) D (x, y) So point D (14, 6), that's what we call a motion vector. RACSO PRODUCTS Page 6 7. Mathematics Pure 1 (coordinating geometry) email:racsostudenthelp@gmail.com - We discussed this from previous sections, you can write a line equation in the form of y - y1 y m (x - x1) or y mx c. I advise you to use y - y1 y m (x - x1), unless stated in the question that should be written in the form of y and mx c. RACSO PRODUCTS Page 7. Mathematics Pure 1 (coordinating geometry) email:racsostudenthelp@gmail.com 4 Y-interceptions. Getting X-Intercept Vertical Line y-Axis Out of The Equation, put y'0 find y, Horizontal Line x-axies You should get X -3/2 X-Intercept -3/2 -Something to remember, (b) RACSO PRODUCTS Page 8 9. Mathematical Pure 1 (coordinating geometry) email:racsostudenthelp@gmail.com - Whenever you have a line leaning on the right, as (a) gradient is always positive and the line leaning on the left as (b) the gradient is negative. I think it's now very easy to just look at the line and know if the gradient is positive or negative, and looking at the C value to determine what the u-interception is. Let's move on to the crossroads, any idea what is crossing? In coordinate geometry, this is the point where two or more lines/curves meet. The intersection can occur between line and line, curve and line, or curve and curve (just like the numbers shown below) in any case, receiving a point of intersection; we need two lines/curves equations. Something else to remember that there can only be one crossing point or more of that one. (For this level I will discuss only up to 2 crossing points) - Look at the following graphs, (a) (b) (c) - You will come across the word tangent, which is a line that crosses the curve only once and does not cross it! Just like the graph (b). In other words, we can say that the line on the graph (b) has a tangent to the curve. RACSO PRODUCTS Page 9 10. Mathematics Pure 1 (Geometry Coordination) email:racsostudenthelp@gmail.com 9709/12/O/N/2009 - How would you solve this problem? Be sure to find the crossing point you first sove two equations simultaneously (you can use the method of replacement or elimination). The line has an equation of 2y' x y 5 and the curve has an equation y' x2 - 4x and 7. If I do y issue from the line leveling, I should have y' (x q 5)/2. Now I can equate (x y 5)/2 x2 - 4x 7 and end up with, with a square equation y' 2x2 - 9x 9. Hope you can now solve this problem. You should get 2 values x. x'3 or x 1.5. This is the answer, as the questions ask you to find X values if asked to find cordinates crossing. You have to would take any of the 2 equations you you you Considering, either 2y'x y y y x x 2 - 4x y 7, connect the value x and get the appropriate value y' 4 or y' 3.25. this means that the intersection coordinates (3.4) and (1.5, 3.25). Let me get you back to the square, do you remember how discrimination works? it helps us determine how many solutions we would get from the square equation. There are 3 options, either get 2 solutions, one solution or no solution. From the CIE issue, the line crosses the curve twice, but assuming that we had no graph, but only two equations, 2y' x 5 and y' 2x2 - 9x 9 and asked to know whether the curve and line intersect or not, and if so, how many times. First I will replace RACSO PRODUCTS Page 10 11. Mathematics pure 1 (coordinating geometry) email:racsostudenthelp@gmail.com one equation to another, make it look like this, y' 2x2 - 9x 9, and that's the point where discriminators come in handy! - If b2 - 4ac No 0 is not a solution, if b2 - 4ac No 0, only one solution (sometimes means that the line is crossed only once, that is the line touches), and if b2 - 4ac No 0 , there are two solutions (lines do not intersect) - From expression, b2 - 4ac and looking at the equation y' 2x2 - 9x 9, b -9, a'2 and c'9. If you decide, 92- 4 (2)9 9. 9 more zero, so there are two solutions, as we have seen from the chart, there are two values x. CAMBRIDGE PAST PAPER ISSUES RACSO Products Page 11 12. Mathematics Pure 1 (Coordinating Geometry) email:racsostudenthelp@gmail.com RACSO PRODUCTS Page 12 13. Mathematics Pure 1 (Coordinating Geometry) email:racsostudenthelp@gmail.com RACSO PRODUCTS Page 13 14. 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