Cheatography

Co-Ordinate Geometry & Simultaneous Equations Cheat Sheet

by Ebrahim.O via cheatography.com/133545/cs/27308/

Sketching Straight Lines

Using x & y intercepts | C cannot be equal to 0	Gradient - intercept method
ax + by = c --> e.g 2x - 5y = 10	y = mx + c
y = 0 when solving x	Horizontal Line
2x - 0 = 10	gradient = 0
x = 5	y = c
x = 0 when solving y	Vertical Line
2(0) - 5y = 10	gradient = undefined
-5y = 10	x = a
y = 10/-5	a --> x-intercept
y = -2	

Finding the equation of a straight line

Gradient + y-intercept	Gradient + a point (x1, y1)	2 points (x1, y1) (x2, y2)	Distance between 2 points
Sub into equation	Sub into equation	1st find m	Sub into equation
y = mx + c	y - y1 = m(x - x1)	m = y2 - y1/x2 - x1	AB = √(x2 - x1)² + (y2 - y1)²
Example	Example	2nd sub into equation	Example
c = 5 | m = -1	m = 2 | (2, -0.5)	y - y1 = m(x - x1)	A = (3, -5) | B = (-2, 1)
y = -1x + 5	y + 0.5 = 2(x - 2)	Example	AB = √(-2 - 3)² + (1 - -5)²
	y + 0.5 = 2x - 4	(-1, 4) , (5, 2)	AB = √(-5)² + 6²
	y = 2x - 4.5	m = 2 - 4/3 - (-1)	AB = √25 + 36
		m = -2/4 --> -1/2	AB = √61
		y - 4 = -1/2(x - - 1)	

Finding the equation of a straight line (cont)

y - 4 = - 1/2x - 1/2
y = - 1/2x + 7/2

Middle point of a line

Middle point of a line	Paralell Lines	Perpendicular Lines
Sub into equation - i.e / means divide	Sub into equation	Sub into equation
M = (x1 + x2/2, y1 + y2/2)	m1 = m2	m1 x m2 = -1 or m2 = 1/m1
Example	Example - 1st find m (gradient)	Example - 1st find m (gradient)
(3, 5) | (2, 7)	A (4, 13) | B (2, 9)	A (-4, 9) | B (2, -6)
M = 3 + 2/2, 5 + 7/2	mAB = 9 - 13/2 - 4	mAB = -6 - 9/2 - (-4)
M = (5/2, 12/2)	mAB = -4/-2	mAB = -15/6
M = (5/2, 6)	mAB = 2	mAB = -5/2
	C (0, -10) | D (15, 0)	C (-5, 8) | D (10, 14)
	mCD = 0 - (-10)/15 - 0	mCD = 14 - 8/10 - (-5)
	mCD = 10/15	mCD = 6/15
	mCD = 2/3	mCD = 2/5
	∵ mAB ≠ mCB	2nd | sub into m1 x m2 = -1
	∴ not parralell	-5/2 x 2/5 = -1
		-10/10 = -1
		∴ AB ⊥ CD

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