

Graphing Lines Video Lecture

Section 3.3 and 3.5

Course Learning Objective:

- 1) Identify and use connections between linear equations, their slope, their intercepts, and their graphs. (Review from Math 840)**
- 2) Graph linear equations and model applications based on these equations and their graphs.**

Weekly Learning Objectives:

- 1) Identify intercepts of a graph.**
- 2) Graph a linear equation by finding and plotting intercepts.**
- 3) Use the slope-intercept form to graph a linear equation.**
- 4) Identify and graph vertical and horizontal lines.**

Graphing Lines

How to graph a line:

Method 1) Using x-intercepts and y-intercepts

- Find the x-intercept by plugging in $y = 0$ and solve for x
- Find the y-intercept by plugging in $x = 0$ and solve for y
- Graph the x-intercept on the x-axis and y-intercept on the y-axis
- Connect the two intercepts with a line

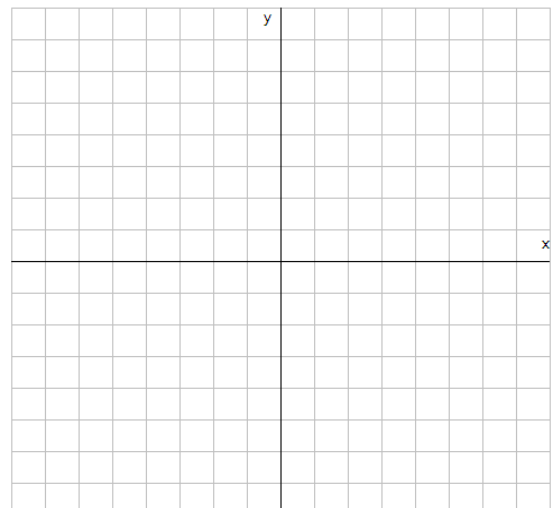
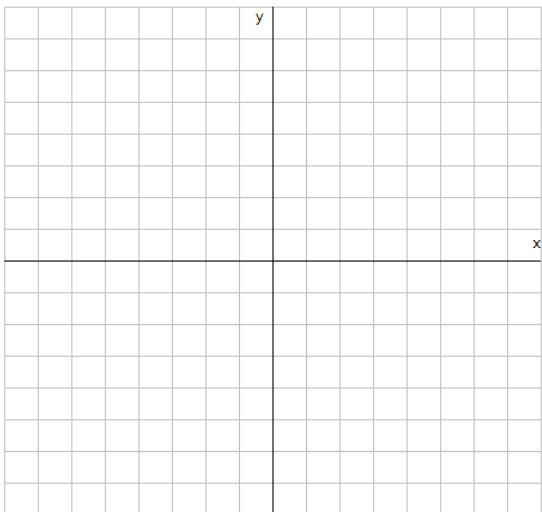
Method 2) Using the slope and y-intercept

- Solve the equation for y to put it into slope-intercept form: $y=mx+b$
- Identify b (the y-intercept) and plot it first on the y-axis
- Identify m (the slope) and write as a rise/run
- Starting at the y-intercept, count the correct rise/run and put a dot on the point you end up at
- Connect the two points with a line

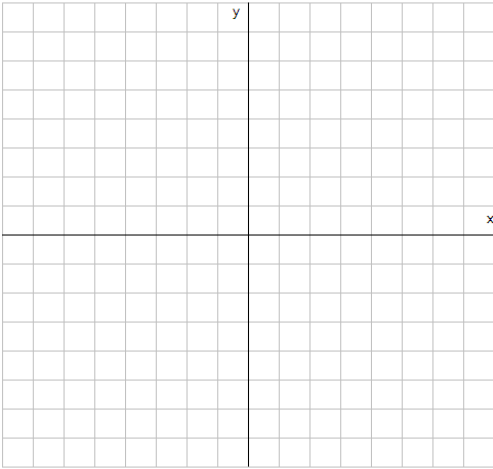
Examples:

Graph the line $3x - y = 2$

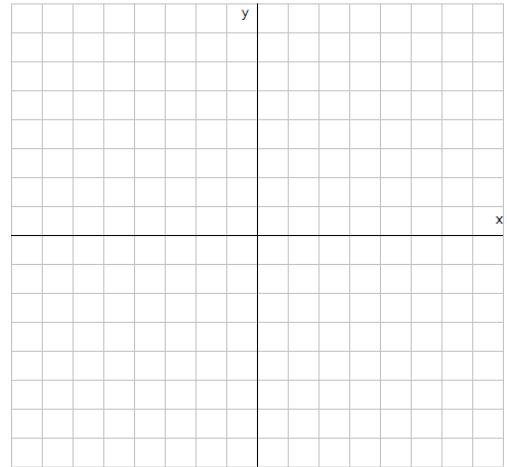
Graph the line $4x - 5y = 20$



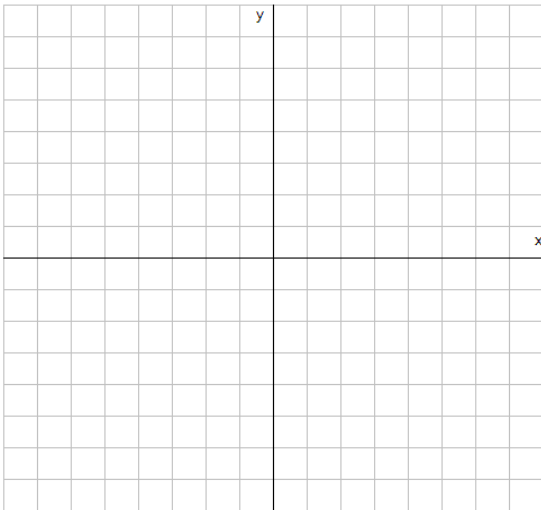
Graph the line $y = 4$



Graph the line $x = -2$



Graph the line $3x - 2y = 6$



Graph the line $15 - 3y = x$

