

2022-2023 James E Davis Trimester 1 Algebra 1

Week 6 Class Notes

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Previously...

We went over how to find the equation for a line:

1. Slope intercept formula $y = mx + b$
2. Point slope formula $y - y_1 = m(x - x_1)$

We went over how to find the equation of a line based on knowing the following:

1. A point and a slope
2. Two points

If we're given two points, and we want to calculate the slope, we do the following:

$$m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$

Once we know the slope, we either use the point slope formula or the slope intercept formula to find the equation of the line.

Writing Equations of Lines (Cont.)

We went over last week how to use the point slope formula, but we didn't go over how to utilize the slope-intercept formula if we have two points. We employ the following steps to use the slope intercept formula:

$$y = mx + b$$

First we calculate m (as done above)

Next, we plug in one of the two points (x_1, y_1) , (x_2, y_2) and solve for b .

Example 6. Let's say we have the points $(-2, 5)$ and $(0, 0)$.

First we want to calculate m

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - 5}{0 + 2} = \frac{-5}{2} = -\frac{5}{2}$$

Then, we plug in m and solve for b

$$y = -\frac{5}{2}x + b$$

We plug in the point $(0, 0)$ as follows:

$$0 = -\frac{5}{2}(0) + b$$
$$0 = b$$

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Writing Equations of Lines (Cont.)

10/20 Entrance Pass Redo

1. Find the equation of the following lines (using either of the formulas we learned in class)

a. Value of slope $m = 4$, value of vertical intercept $b = 5$

Hint: Use the slope-intercept formula or the point-slope formula with point $(0, 5)$

b. Containing point $(-2, 5)$ and slope $m = -1$

Hint: Use either the point-slope formula or the slope-intercept formula $y = -x + b$ and plug in $(-2, 5)$ to get $5 = -(-2) + b$ and solve for b .

c. Containing points $(0, -1)$ and $(3, 0)$

Hint: Use the rise over run formula on the two given points to figure out the slope m , then either the point slope formula or the slope intercept formula as before in part b.

2. Graph each of the lines found in **part a.-c.** (preferably using graph paper)