

3.5 Equations of Parallel & Perpendicular Lines Notes

Recall the relationship between the slopes of parallel & perpendicular lines as learned in previous warmups:

THEOREMS

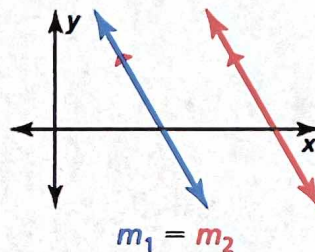
3.13 Slopes of Parallel Lines

In a coordinate plane, two nonvertical lines are parallel if and only if they have the same slope.

Any two vertical lines are parallel.

Proof page 423

Prove this Theorem Exercise 29, page 427



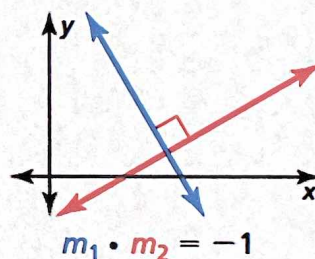
3.14 Slopes of Perpendicular Lines

In a coordinate plane, two nonvertical lines are perpendicular if and only if the product of their slopes is -1 .

Horizontal lines are perpendicular to vertical lines.

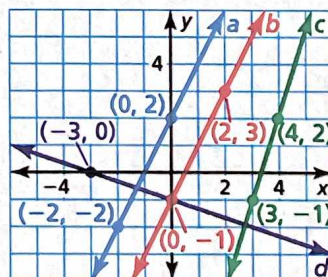
Proof page 424

Prove this Theorem Exercise 30, page 427



Ex.1

Determine which lines are parallel and which lines are perpendicular.



Ex. 2

Use slope to determine if \overleftrightarrow{AB} and \overleftrightarrow{CD} are parallel, perpendicular or neither.

Hint: You may graph the lines or use the slope formula

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

1. $A(-2, 3), B(2, 6), C(-1, 0), D(3, 3)$

Slope of \overleftrightarrow{AB}	Slope of \overleftrightarrow{CD}	Types of Lines

2. $A(0, 2), B(5, 4), C(1, 8), D(3, 3)$

Slope of \overleftrightarrow{AB}	Slope of \overleftrightarrow{CD}	Types of Lines

4. $A(-1, 8), B(2, 6), C(-1, 2), D(3, 3)$

Slope of \overleftrightarrow{AB}	Slope of \overleftrightarrow{CD}	Types of Lines

Graphs for above problems:

