6.1 Slope of a Line

Slope: a measure of how one quantity changes with respect to the other.
- It can be determined by calculating \( \frac{\text{rise}}{\text{run}} \).

\( \frac{\text{rise}}{\text{run}} \rightarrow \text{vertical distance} \quad \text{horizontal distance} \)

**Ex. #1** graphs

Line segment is going down to the right:
- \( y \) decreases, therefore rise is negative
- \( x \) increases

\[ \text{Slope} = \frac{\text{rise}}{\text{run}} = \frac{-3}{9} = -\frac{1}{3} \]

**Ex. #2**

Undefined slope because:
\[ \text{Slope} = \frac{\text{rise}}{\text{run}} = \frac{4}{0} = \text{zero denominator} \]
- Fractions means undefined.
Ex. #3. Draw a line segment with each slope

(a) \( \frac{4}{9} \)

(b) \( -\frac{8}{3} \)

To find the slope of any line, use the formula

\[
\text{slope of line } AB = \frac{y_2 - y_1}{x_2 - x_1}
\]

Ex. #4. Find the slope of a line that passes thru E(4, -5) and F(8, 6)

\[
E (4, -5) \quad F (8, 6)
\]

\[
\text{slope} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{6 - (-5)}{8 - 4} = \frac{11}{4}
\]

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