Numeric Progression Summary

Iterations	m	b	MSE	Notes
0	-1.000	1.000	–	Starting points
1	1.700	2.100	1.040	large correction
2	1.260	1.900	0.064	Overshoot adjusted
3	1.340	1.916	0.0348	fine-tuning
4	1.3336	1.8968	0.0318	converging

Interpretation — Trend and Intuition

- **Convergence behavior:**
  Across four iterations, the loss (MSE) consistently **decreases** from 1.04 → 0.064 → 0.035 → 0.032. The values of MSE become smaller, showing the algorithm is converging toward an optimal line that fits the two points.

- **Parameter movement:**
  m oscillates slightly around ~1.33 and b around ~1.9, and both are stabilizing. This means the gradient is now very small, and the line y=1.33x+1.90 already produces very low error.

- **Error reduction:**
  Each iteration reduces the residuals (differences between predicted y^ and true y) in both points.
  The learning rate (0.1) is appropriate and big enough for fast correction at the start, but small enough for smooth convergence later.

- **Interpretation summary:**
  → The gradient descent is **successfully minimizing the cost function**.

→ Both m and b are moving steadily toward their optimal values, and the error (MSE) is **monotonically decreasing**, confirming the process is working as intended.