4 (continued) (Lecture Notes p. 67)

(5) \[ y = -0.04x + 1.68 \]

\[ \text{movie admissions (billions)} \]
\[ \text{for each year after 2002} \]

How many movie admissions in 2002?

Find \( y \) when \( x \) is 0.

\[ y = -0.04(5) + 1.68 \]
\[ = -0.2 + 1.68 \]
\[ y = 1.48 \]

There were 1.48 billion admissions in 2002.

Quiz today. § 3.5 Equations of Lines

Graphing a linear function using slope and y-intercept.

Graph \(-9x + 2y = 3\)

Using slope-intercept method,

\[ \frac{dy}{dx} = \frac{9x + 3}{2} \]
\[ y = \frac{9}{2}x + \frac{3}{2} \]
4 (continued) (Lect. Notes p.57)

(5) \( y = -0.04x + 1.68 \)

\[ \text{movie admissions (billions) # of years after 2002} \]

How many movie admissions in 2002?

Find \( y \) when \( x \) is 5.

\[ y = -0.04(5) + 1.68 \]
\[ = -0.2 + 1.68 \]
\[ y = 1.48 \]

There were 1.48 billion admissions in 2002.

Quiz today 6/7. §§ 3.5 Equations of Lines

Graphing a linear function using Slope and y-int.

\[ \text{(13) Graph } -9x + 2y = 3 \]

Using slope-intercept method

\[ -9x + 2y + 9x = 3 + 9x \]

\[ 2y = \frac{9}{2}x + \frac{3}{2} \]

\[ y = \frac{9}{4}x + \frac{3}{2} \]
\[ m = \frac{0}{2} \]

int \(- (0, \frac{2}{3}), (0, 1.5)\)

16. Write the equation of the line (Slope \cdot \text{int}) with slope \(\frac{3}{7}\) and y-int \((0, 0)\)

\[ m = \frac{3}{7}, \quad b = 0 \]

\[ y = \frac{3}{7}x + 0 \]

\[ y = \frac{3}{7}x \]
19) Write the equation of a line in slope-intercept form when

\[ \text{Slope} \quad \frac{5}{6} \quad \text{line thru} \quad (-18, 6) \quad \text{point} \quad x_1, \quad y_1, \]

\[ y - y_1 = m(x - x_1) \]
\[ y - 6 = \frac{5}{6}(x - (-18)) \]
\[ y - 6 = \frac{5}{6}(x + 18) \]
\[ y - 6 = \frac{5}{6}x + \frac{5 \cdot 18}{6} \]
\[ y - 6 = \frac{5}{6}x + 15 \]
\[ y = \frac{5}{6}x + 21 \]

Writing Equation of Slanted Lines
1) Point, determines which form of the line you will use.
2) Slope
Some ways to find Slope
- Parallel - same slope
- Perpendicular - negative Reciprocal
- with two points
  \[ m = \frac{y_2 - y_1}{x_2 - x_1} \]

26) Find an equation of the line graphed.
Use point \((0, 2)\) for \((x_1, y_1)\)
Point: \((0, 2)\) \( (1, -1) \)
Slope: \( m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-1 - 2}{1 - 0} = \frac{-3}{1} = -3 \) \( m = 3 \)
The point determines where you start.
\((0, 2)\) is \(y\)-int \( b = 2 \)
Start with slope-intercept form
\[ y = -3x + 2 \]
The instructions tell us where to stop

Standard Form: \( Ax + By = C \)

\[ y = -\frac{3}{3}x + 2 \]

\[ 3x + y = 2 \] (Stop)

36. Find eqn of line parallel to \( -5x + 6y = 300 \) and thru point \((-18, 6)\)

Point \((-18, 6)\)
Slope: ??

\[ \text{our line} \]
\[ \text{steal their} \]
\[ \text{slope: } \frac{5}{6} \]
\[ \text{point: } (-18, 6) \]
\[ \text{just a point} \]
\[ y - y_1 = m(x - x_1) \]
\[ y - 6 = \frac{5}{6}(x + 18) \]
\[ y = \frac{5}{6}x + 21 \]

\[ y = \frac{5}{6}x + 21 \]

\[ \text{Their line} \]
\[ L - 5x + 6y = 30 \]

\[ 6y = 5x - 300 \]
\[ \frac{6y}{6} = \frac{5x}{6} - 50 \]
\[ y = \frac{5}{6}x + 50 \] (slope)

See #19
35) Find eq'n of line thru (0,2) and perpendicular to \( 3y = x - 12 \)

Point: (0,2)  
slope: ??

<table>
<thead>
<tr>
<th>Our line</th>
<th>Their line</th>
</tr>
</thead>
<tbody>
<tr>
<td>( m = -3 )</td>
<td>( 3y = \frac{1}{3}x - 12 )</td>
</tr>
<tr>
<td>opp. rep.</td>
<td>( y = \frac{1}{3}x - \frac{12}{3} )</td>
</tr>
<tr>
<td>( y = -3x + 2 )</td>
<td>( y = -3x - 4 )</td>
</tr>
</tbody>
</table>

* See problem 26

*pg 60 in lecture notes & print

Write Equations of Horizontal and Vertical lines

Vertical = "x = "  
Horizontal = "y = "
3. Write an equation.
   Horizontal: \((0, 5)\)
   \[y = 5\]

3.2 Vertical, thru: \((-3, 3)\)
   \[x = -3\]

3.7 Graphing Linear Inequalities

**Step**

1. Solve for \(y\), if not, solve for \(x\)

2. \(<\text{ or } \leq\text{ symbols are dashed lines} \)
   \(\geq\text{ or } \geq\text{ symbols are solid lines}\)

3. \(y <\text{ or } y\leq\Rightarrow \text{shade above}\)
   \[x <\text{ or } x\leq\]
   Shade Left

   \[x >\text{ or } x\geq\]
   Shade Below

   \[x =\text{ or } x\neq\]
   Right
Graph

$3x - 5y > -15$

$\sqrt{3x - 5y} - 3x > -15 - 3x$

$-5y > -15 - 3x$

$y > \frac{-3x - 15}{-5}$

$y > \frac{3x}{5} + 3$

graph $y = \frac{3}{5}x + 3$ dashed line

Shade below

$y_{int} = (0, 3)$
3. Graph \( x < 2 \)

- Solve for \( x \)
- Dashed line
- \( x = 2 \) graph, dashed shaded left

6. Graph \( y = -3x \)

- Solve for \( y \)
- Solid line

3. Graph \( y = -3x + 6 \)

- Using solid line and shade above

\[ m = -3 \]
\[ y \text{-intercept (0,0)} \]

Time Management
- Tab creation
  - 5 tabs

1. MLP chapter 3 -
2. Any homework calculation
3. Good study skill