

## Equations of Lines

### Sections 3.4. & 3.5 in MATH 0031

#### Parallel & Perpendicular Lines

- 1) Write the equation of the line that is parallel to  $y = -2x - 5$  and contains the point  $(3, 2)$
- 2) Write the equation of the line that is parallel to  $3x - 4y = 12$  and contains the point  $(-1, 2)$
- 3) Write the equation of the line that is perpendicular to the line  $y = 4x - 2$  and contains the point  $(1, -3)$ . Write the answer in standard form.

- 4) Write the equation of the line that is perpendicular to the line  $x + 5y = 10$  and contains the point  $(4, 4)$
- 5) Write the equation of a line parallel to the line  $2x + y = 3$
- 6) Write the equation of a line perpendicular to the line  $4x - 2y = 9$
- 7) Write the equation of a horizontal line that contains the point  $(-2, 1)$
- 8) Write the equation of a vertical line that contains the point  $(-2, 1)$

## Applications

- 9) According to the National Safety Council, accidental deaths have decreased at a constant rate of 1000 deaths per year since 1990. In 1990, approximately 19,500 deaths were reported to be accidental.
- Write an equation that models the number of accidental deaths in terms of the number of years since 1990.
  - Use this equation to approximate the number of accidental deaths in the year 2001.
- 10) After giving the traffic report, the reporting helicopter that was cruising at an altitude of 2500 meters begins to descend at a rate of 200 meters per minute. Let  $x$  = the number of minutes since the helicopter started to descend, and  $y$  = the altitude of the helicopter in meters.
- What is the slope? Explain the meaning of the slope in the context of the situation.
  - What is the equation of the line that fits this information.

11) The Ajax car rental cost schedule for a compact car is shown in the table below.

Miles: $x$	Cost: $y$
50	\$39
100	43
150	47
200	51
250	55

- a. Check if this table could represent a linear equation?
  - b. If linear, what is the slope? Interpret its meaning in this context.
  - c. What is the equation of the line?
  - d. What is the cost of driving 180 miles?
- 12) Gtech is marketing a new line of clothes dryers that use microwaves rather than hot air to dry clothes. It costs the company \$45000 to produce the first 100 dryers. The total cost was up to \$61,000 with 80 additional dryers.
- a. Write the equation for cost  $y$  in terms of producing  $x$  number of dryers?
  - b. Interpret the meaning of the slope and the vertical intercept in this context.