1. **(6 points)** *Bill distributed \$1000 between two investments: a CD which returns 1% annual interest, and a mutual fund which returns 3% annual interest. He earned a total of \$18 in interest after a year. How much money did he put into each investment?*

   Let us denote the quantity put into the CD as x; since the remainder went into the mutual fund, we can denote the quantity in the mutual fund as $1000 - x$. Then, the interest on the x dollars earning 1% interest is $0.01x$ dollars, while the interest on the $1000 - x$ dollars earning 3% interest is $0.03(1000 - x)$ dollars Since the total interest is \$18, we know that:

$$\begin{aligned} 0.01x + 0.03(1000 - x) &= 18 \\ 0.01x + 30 - 0.03x &= 18 \\ -0.02x &= -12 \\ x &= 600 \end{aligned}$$

   so \$600 are in the CD, and \$400 are in the mutual fund.

2. **(3 points)** *Solve the linear inequality $2x + 2 < 7x - 1$; you may express the solution either in terms of x or in interval notation.*

$$\begin{aligned} 2x + 2 &< 7x - 1 \\ -5x + 2 &< -1 \\ -5x &< -3 \\ x &> \frac{3}{5} \end{aligned}$$

   so one could answer with either the inequality $x > \frac{3}{5}$ or the interval $(\frac{3}{5}, \infty)$.

3. **(4 points)** *Find an equation of the line through $(-2, 5)$ and $(1, -1)$.*

   First we calculate the line's slope, based on the two points:

$$m = \frac{-1 - 5}{1 - (-2)} = \frac{-6}{3} = -2$$

   and then, based on the slope, we could use point-slope form with either of the two points (here we use $(1, -1)$ as an example):

$$y - (-1) = -2(x - 1)$$

   which could be written in slope-intercept form, if desired:

$$y = -2x + 1$$

4. **(3 points)** *Given the piecewise function $f(x) = \begin{cases} 5 \text{ if } x \leq 2 \\ 2x - 3 \text{ if } x > 2 \end{cases}$, calculate the values of the following expressions:*

   - $f(1)$.
     Since $1 \leq 2$, $f(1) = 5$.

- $f(2)$.
  Since $2 \leq 2$, $f(2) = 5$.
- $f(3)$.
  Since $3 > 2$, $f(3) = 2 \cdot 3 - 3 = 3$.

5. **(4 points)** *Find the domain of the function* $g(x) = \sqrt{7 - 3x}$.

   We identify the places where this function is incalculable: since it contains a square root, we must consider the prospect that the argument of the square root mgiht be negative. Thus, the function cannot be calculated if $7 - 3x < 0$; rearranging and solving this inequality gives $x > \frac{7}{3}$. Since this is the set of points where $f(x)$ cannot be found, the domain is simply all the other points, i.e. when $x \leq \frac{7}{3}$, or, in interval notation, $(-\infty, \frac{7}{3}]$.