Worksheet # 1: Review

1. Find the equation of the line that passes through $(1, 2)$ and is parallel to the line $4x + 2y = 11$. Put your answer in $y = mx + b$ form.

2. Find the slope, x-intercept, and y-intercept of the line $3x - 2y = 4$.

3. Write the equation of the line through $(2, 1)$ and $(-1, 3)$ in point slope form.

4. Write the equation of the line containing $(0, 1)$ and perpendicular to the line through $(0, 1)$ and $(2, 6)$.

5. The quadratic polynomial $f(x) = x^2 + bx + c$ has roots at -3 and 1. What are the values of b and c?

6. Let $f(x) = Ax^2 + Bx + C$. If $f(1) = 3$, $f(-1) = 7$, and $f(0) = 4$ what are the values of A, B and C?

7. Find the intersection of the lines $y = 5x + 10$ and $y = -8x - 3$. Remember that an intersection is a point in the plane, hence an ordered pair.

8. Recall the definition of the absolute value function:

$$|x| = \begin{cases} x & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \end{cases}.$$

   Sketch the graph of this function. Also, sketch the graphs of the functions $|x + 4|$ and $|x| + 4$.

9. A ball is thrown in the air from ground level. The height of the ball in meters at time t seconds is given by the function $h(t) = -4.9t^2 + 30t$. At what time does the ball hit the ground (be sure to use the proper units)?

10. True or False:

    (a) For any function f, $f(s + t) = f(s) + f(t)$.

    (b) If $f(s) = f(t)$ then $s = t$.

    (c) A circle can be the graph of a function.

    (d) A function is a rule which assigns exactly one output $f(x)$ to every input x.

    (e) If $f(x)$ is increasing then $f(-52.55) \leq f(1752.0001)$.