Problems given here are examples for some of the material covered in class. However, this list does not represent all the material covered in the class. Please refer to the class notes and homework problems for a complete list.

1. Write the slope-intercept form of the equation of a line containing the point $P$ and having slope $m$:
   - $P = (2, 4), m = -\frac{3}{4}$
   - $P = (-1, 3), m = 0$
   - $P = (0, 3), m = \text{undefined}$

2. Write the slope-intercept form of the equation of a line with the given properties:
   - Containing the points $(1, 3)$ and $(-1, 2)$
   - Horizontal, containing the point $(-3, 2)$
   - Vertical, containing the point $(3, 8)$
   - Perpendicular to the line $x - 2y = -4$, containing the point $(1, -2)$
   - Parallel to the line $y = 2x$, containing the point $(-1, 2)$

3. Find the intercepts and graph: $5x + 3y = 18$

4. Find the standard form of the equation of the circle with endpoints of a diameter at $(1, 4)$ and $(-3, 2)$.

5. Find the standard form of the equation of the circle with center $(-1, 3)$ tangent to the line $y = 2$.

6. Find the center and the radius of the circle and graph: $2x^2 + 2y^2 + 8x + 7 = 0$

7. Find $\frac{f(x + h) - f(x)}{h}, h \neq 0$, for $f(x) = -3x + 1$.

8. Determine the intervals in which $f$ is increasing, decreasing, or constant:
9. Determine whether the function is even, odd, or neither:
   \[ f(x) = 3x^3 + 5, \quad g(x) = 2x^2 - 1, \quad h(x) = \frac{x}{x^2 + 1} \]

10. Find the average rate of change of \( f(x) = x^3 - 2x + 1 \) from \(-3\) to \(-2\), from \(-1\) to \(1\), and from \(1\) to \(3\)

11. A circle of radius \( r \) is inscribed in a square. Express the area \( A \) of the square as a function of the radius \( r \) of the circle. Express the perimeter \( P \) of the square as a function of \( r \).

12. Let \( f(x) = 3x^2 + 18x \). Graph \( f \) by finding whether graph opens up or down, and by finding its vertex, axis of symmetry, intercepts, and domain. Determine the range and the intervals where the graph is increasing or decreasing.

13. Graph \( f(x) = 4(x + 4)(x + 3)^3 \) by using the techniques described in section 5.1.

14. Solve the following inequalities:
   \[ x^3 - 2x^2 - 3x > 0, \quad x + \frac{12}{x} \leq 7 \]

15. If \(-5i\) is a zero of \( f(x) = x^3 + 3x^2 + 25x + 75 \), find the remaining zeros of \( f \).