1. (4 points) Solve $\frac{2}{7}(w-3) - \frac{25}{7} = -4$ for w.

2. (4 points) Solve the following system or show it has no solutions. $\begin{cases} 2x - 3y = 9 \\ 4x + 3y = 9. \end{cases}$

3. (4 points) Find an angle θ coterminal with the angle $\frac{17\pi}{6}$ so that $0 \le \theta \le 2\pi$.

4. (4 points) Find the area of the sector of a circle with central angle $60°$ if the radius of the circle is 3m.

5. (4 points) Sketch the graph of $g(x) = -x^3 + 2x^2$. Make sure your graph shows all intercepts and exhibits the proper end behavior.

6. (4 points) Determine the net change and the average rate of change of the function $f(t) = t^2 - 2t$ between $t = 2$ and $t = 2 + h$.

7. (4 points) Find the domain of the function $f(x) = \frac{x}{\sqrt{9-4x}}$.

8. (4 points) Suppose $90° \le \theta \le 180°$ and $\sin\theta = \frac{2}{9}$. Find $\cos\theta$.

9. (4 points) Sketch the graph the function $f(x) = 1 - 2^x$. State the domain, range, and asymptote. Label at least three points on your graph.

10. (5 points) Find an equation of the line passing through the point $(1, -2)$ and perpendicular to the line $x + 2y = 6$.

11. (5 points) Solve $\frac{x+5}{x-2} = \frac{5}{x+2} + \frac{28}{x^2-4}$ for x.

12. (5 points) Simplify $\left(\frac{a^4 c^2}{4b^4}\right)\left(\frac{a^3 b^2}{c^3}\right)^2$ completely. Write your answer with only positive exponents.

13. (5 points) Solve the equation $F = \frac{GmM}{r^2}$ for M.

14. (5 points) Sketch the graph of the function $f(x) = 3 - \frac{1}{2}(x-1)^2$ by indicating how a more basic function has been shifted, reflected, stretched, or compressed. Label all intercepts and the vertex on the graph. Find the maximum value of f.

15. (5 points) Solve $3x + 1 \ge 5(x - 4)$ for x. Express your solution in interval notation.

16. (5 points) Perform the division and simplify $\frac{x^2+2x-3}{x^2+8x+16} \div \frac{x-1}{3x+12}$.

17. (5 points) Evaluate $\cos(-210°)$.

18. (6 points) Given $f(x) = \frac{x-1}{x+1}$ and $g(x) = x^2 + 1$. Evaluate and simplify

    (a) $g(f(\frac{3}{2}))$
    (b) $f(g(x))$.

19. (6 points) Find all solutions x for each of the following. If there is no solution, write NO SOLUTION.
    (a) $(x+2)^2 = (x-4)^2$
    (b) $2x^2 + x = 0$.

20. (6 points) Solve each of the following for x. If there is no solution, write NO SOLUTION.
    (a) $\log_5 \frac{1}{125} = x$
    (b) $\frac{10}{x} = \frac{6}{5x} + 1$.

21. (6 points) Evaluate and simplify each of the following.
    (a) $32^{-\frac{1}{5}}$
    (b) $10^{\frac{2}{7}} \cdot 10^{\frac{19}{7}}$.