Final Review Assignment #2 **Secondary 3 Honors**

DO THIS ASSIGNMENT ON YOUR OWN PAPER.

1. Find the remainder when dividing $(2x^3 - 5x^2 + 6x - 3)$ by $(x + 3)$.
2. Which of the following functions are one-to-one?
   $y = x^4$ $y = x^3 + 1$ $y = -x^2 + 5x$ $y = -2x + 6$
3. Solve $\sqrt{x-1} = x - 7$. Does the equation have any extraneous solutions?
4. Find any relative minimum and relative maximum values for the function $y = 3x^3 + 5x^2 - 2$
5. Simplify $\frac{x^2+5x}{x^3+3x^2-10x}$
6. If $f(x) = x^2 - 2x + 1$, $g(x) = 3x - 1$, and $h(x) = 2$, what is $(f \circ g \circ h)(x)$?
7. Solve the equation $\frac{5x+6}{x-3} = 4$
8. Which of the following are functions?
   $y = -\sqrt{2x+5}$ $y^2 = 3x + 1$ $y = \sqrt[3]{x+5}$ $y = |x - 6|$
9. Solve for x. $lne^{3x+5} = 6$
10. State the domain and range of $y = |2x + 3|$
11. Solve for x. $2^{x+5} = 6$
12. Given $f(x) = \begin{cases} 3x^2 - 6, x \le 2 \\ 5x + 1, x > 2 \end{cases}$ find $f(-3)$
13. Write the equations of the asymptotes for $f(x) = \frac{3x^2+6x}{x+5}$
14. Find $\lim_{x \to 2} \frac{x+3}{x^2+8x+15}$
15. If n is odd, describe the end behavior of the graph of $y = x^n + 3$.
16. Find the inverse of $f^{-1}(x) = \sqrt[3]{x+2}$
17. Graph $f(x) = \frac{x^2-4}{x-2}$
18. Find $\frac{dy}{dx}$ for $y = 3x^2 + 6x - 8$, when x = 2.6.
19. A deposit of $10,000 is made in a savings account for which the interest is compounded continuously. The balance will double in 12 years. What is the annual interest rate for this account? (Hint: use the equation $A = Pe^{rt}$)

Solve the following equations on the interval [0, 2π)

20. $2\sin x - 1 = 0$ 21. $\frac{1}{2}\sec x - 1 = 0$ 22. $2cos^2 x - cosx = 1$
23. Rewrite the following using only sine and cosine. $\cot x \csc x$

Do the remaining problems WITHOUT your calculator.

24. What quadrant is the angle $\frac{4\pi}{3}$ in?
25. Is $cos\frac{3\pi}{4}$ positive or negative?
26. Solve for θ between 0° and 360°. $2\cos\theta = -\sqrt{3}$
27. Use identities to simplify $\cos x \csc x \tan x$.
28. Write the equation of a tangent graph that has a period of 2π, vertical shift up 2, and a horizontal shift left $\frac{\pi}{2}$.
29. Graph $y = 2(x + 3)^2 - 1$
30. Factor $3x^3 + x^2 - 18x - 6$
31. Factor $6x^2 - 11x - 2$
32. Expand the logarithm $\log\sqrt{\frac{x}{yz^2}}$