Name SHS Pre-Calculus Test 1 Review Date

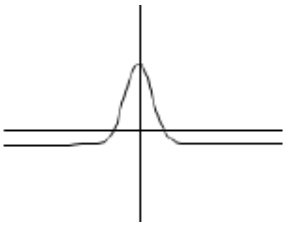
Show all work and fully answer all questions in order to receive full credit. All questions are non-calculator except for 22, 23, and the MC.

Determine the domain and all intercepts. (3pts each)

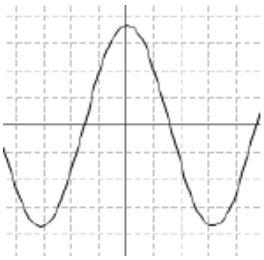
1. $y = \frac{x+2}{x^2-16}$
2. $y = \sqrt{2x+1}$

Use the graph below to determine if the function is even/odd/or neither. Justify exactly how you know. (2pts each)

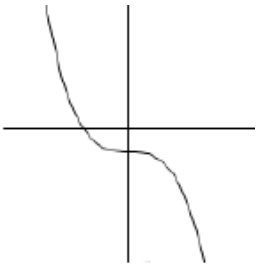
3.



4.



5.



Use the algebraic test to determine if the function is even/odd/ or neither. (2pts each)

6. $f(x) = \frac{2x}{x^2+1}$
7. $f(x) = |x|$
8. $f(x) = x^3 - 3x + 5$

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Use the sign of the leading coefficient and the degree of the function to determine the end behaviors. (2pts each).

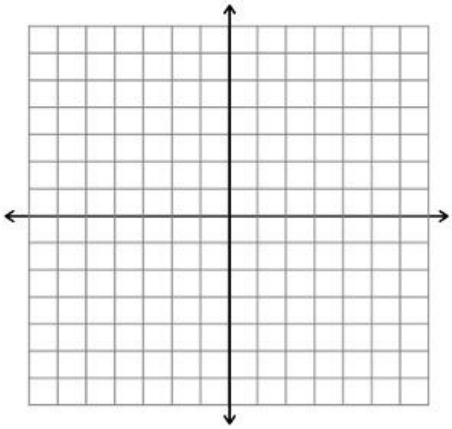
9. $f(x) = 6x^3 - 2x^2 + 3x - 7$ As X→ - ∞ then Y→____; As X→ ∞ then Y→____

10. $f(x) = 6x^3 - 2x^8 + 3x - 7$ As X→ - ∞ then Y→____; As X→ ∞ then Y→____

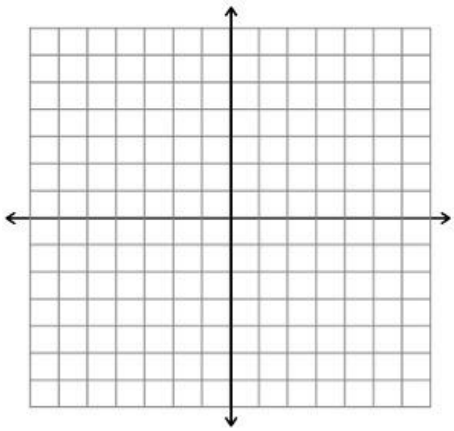
11. $f(x) = 6x^6 - 2x^6 + 3x - 7$ As X→ - ∞ then Y→____; As X→ ∞ then Y→____

For the following functions, determine all relative extrema, interval(s) of increasing or decreasing, point(s) of inflection, and concavity. (6pts each)

12.



13.



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Graph the following rational functions using all critical information including domain, intercepts, asymptotes, and holes. (5 pts each)

14. $f(x) = \frac{1}{x+3}$

15. $f(x) = \frac{3x-1}{x-2}$

16. $f(x) = \frac{2(x+1)}{x^2-x-2}$

17. $f(x) = \frac{x^2}{x+1}$

Graph the following functions using transformations of the critical values from the parent functions. (20pts total)

18. $f(x) = 2\sqrt{x+1} - 3$

19. $f(x) = \frac{1}{2}(x+2)^3 + 1$

20. $f(x) \geq (2x-1)^2 - 1$

21. $f(x) < 3|x-1| + 2$

For the following functions, determine all relative extrema, interval(s) of increasing or decreasing, point(s) of inflection, and concavity. (6pts each)

22. $f(x) = -x^4 + 2x^2 + 1$

23. $f(x) = x^3 + x^2 - 6x$

AND 5 MC at 3 points each