Name_____ Period _____

Precalculus/Honors Algebra 3-4 Fall Semester Multiple Choice Final Review

1. For $g(x)=2x^3-8x^2-2x+5$, find $g(-3)$

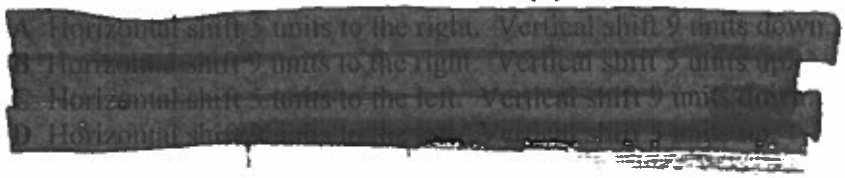
2. If $f(x)=4-x^2$ and $g(x)=x+2$, find $f(g(x))$

3. If $f(x)=x^2+4x+5$ and $g(x)=x-7$, find $3g(f(-2))$

4. Given $f(x)=3x^2+7x-2$ and $g(x)=4x+3$, find $(g-f)(x)$

5. Find the domain of $f(x)=\dfrac{2x}{\sqrt{x+4}}$

6. Describe the transformation of the graph of $f(x)=x^3$ for the graph of $g(x)=(x+5)^3-9$

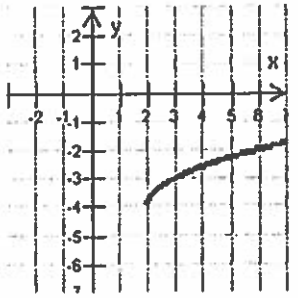


7. Describe the transformation of the graph of $f(x)=x^2$ for the graph of $g(x)=-\frac{3}{4}(x-8)^2+10$

[redacted]

8. Write the equation for the given graph:

[redacted]



9. For each of the following functions determine if they are even, odd, both, or neither:

a. $f(x)=4x^2+8x-2$

[redacted]

b. $f(x)=|x|+3$

[redacted]

c. $f(x)=x^3-2x$

[redacted]

10. Find the inverse of: $f(x)=2x-3$

[redacted]

11. Find the x-intercept(s): $f(x)=\dfrac{3x-5}{x+4}$

12. Use long division to divide: $(4x^3-8x^2+5x-2)\div(2x-3)$

13. Use synthetic division to divide: $(4x^3-3x+5)\div(x+1)$

14. Find the horizontal or slant asymptote(s): $f(x)=\dfrac{x^2-x}{x+1}$

15. Find the horizontal or slant asymptote(s): $f(x)=\dfrac{2x-1}{x}$

16. Find the vertical asymptote(s): $f(x)=\dfrac{x-6}{x^2-4}$

17. Divide, then express your answer in standard form: $\dfrac{8-7i}{1-2i}$

18. Multiply, then express your answer in standard form: $(6-2i)(2-3i)$

19. Find the real zeros of the function: $f(x)=6x^4+11x^3+2x^2-5x-2$

20. Find all the zeros of the function: $f(x)=x^4-4x^3+8x^2-16x+16$

21. Find a polynomial function that has a zero at 2, and a multiplicity of 2 for zeros at 0 and -3

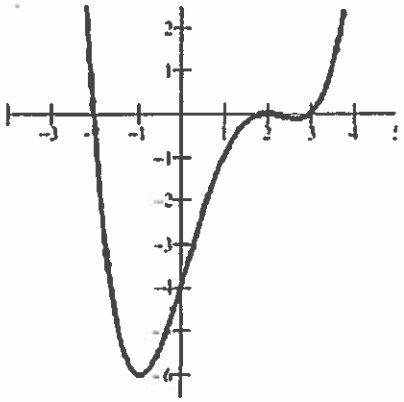
[redacted]

22. Find a 4th degree polynomial function that the following zeros: $-2, 3, 2i$

[redacted]

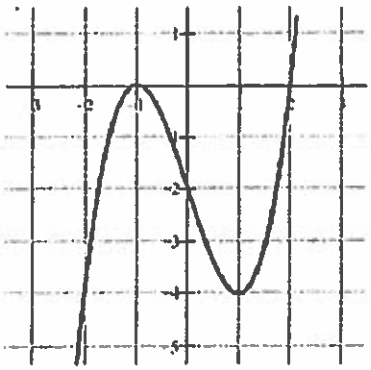
23. Which of the following is the equation for the given graph?

[redacted]



24. The figure shows the graph of $f(x)=(x+1)(x-2)(x-a)$
Determine the value of a

[redacted]

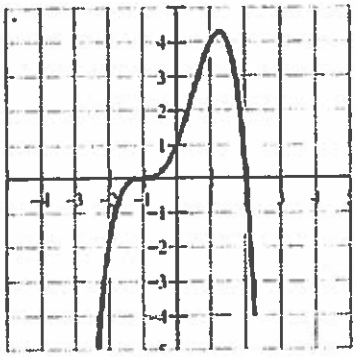


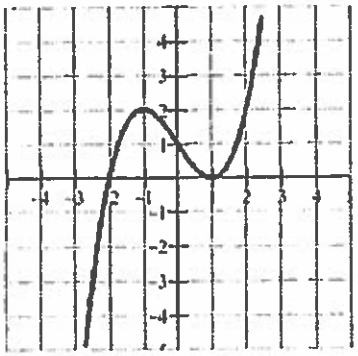
25. Match the following equations with the appropriate graphs:

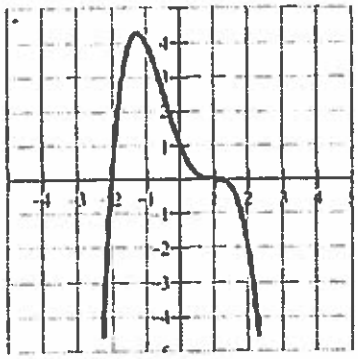
_____ I. $y=\frac{-1}{2}(x-1)^3(x+2)$ _____ II. $y=\frac{1}{2}(x+1)^3(x-2)$

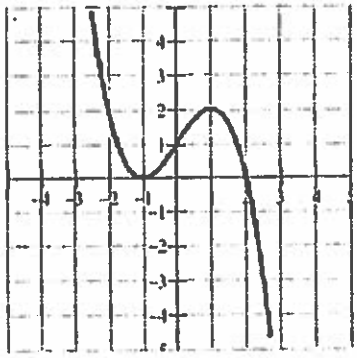
_____ III. $y=-\frac{1}{2}(x+1)^3(x-2)$ _____ IV. $y=\frac{1}{2}(x+1)^2(x-2)$

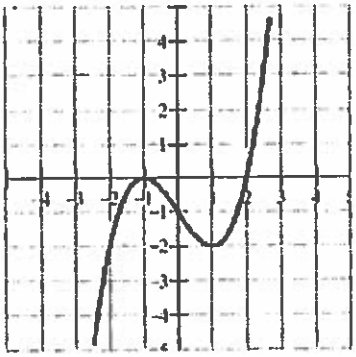
_____ V. $y=-\frac{1}{2}(x+1)^2(x-2)$ _____ VI. $y=\frac{1}{2}(x-1)^2(x+2)$

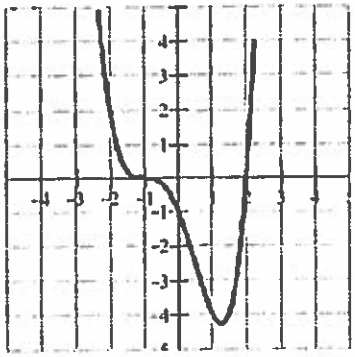
A 

B 

C 

D 

E 

F 

26. Write in exponential form: $\log_a y = x$

[redacted]

27. Evaluate $\log_5 8$ using the change of base formula

[redacted]

28. Rewrite $4\ln(3)-\frac{1}{2}\ln(9)$ as a single logarithm

29. Rewrite $\log 2+3\log 4$ as a single logarithm

30. Write as a sum, difference, or multiple of logarithms: $\log\sqrt[5]{\frac{(x-1)^2}{(x-3)(x+2)^3}}$

31. Write as a sum, difference, or multiple of logarithms: $\log\left(\frac{xy^3}{z^2w}\right)^7$

32. Solve $8^x=40$ for x in common log form.

33. Solve $5^x = 32$ for x to the nearest hundredth.

34. Solve for x: $4^{2x-7} = 1024$

35. Solve for x: $9^{5x} = 243^{3x-2}$

36. Solve for x: $\log\left(10^{3x-11}\right) = 40$

37. Solve for x: $\ln e^{5x+3} = 22$

38. Solve for x: $\log(1-2x)-\log(x-1)=1$

39. Solve for x: $\log_4(x)+\log_4(x+2)=\log_4(3x+56)$

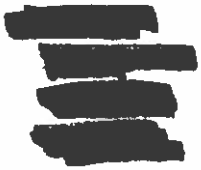
40. You win $10,000 in the state lottery and deposit the earnings in a bank account. The money is invested at a rate of 6.2% compounded continuously. How many years will it take to double your money?

41. Find the initial amount invested at $7\frac{1}{4}\%$ interest compounded quarterly if, after 6 years, it has grown to $20,000.

42. Determine the annual rate of interest compounded continuously for the sum of money in an account to quadruple in 25 years.

51. Find the 90^{th} term of the **arithmetic** sequence with $a_1 = 3$ *and* $a_2 = 9$ (assume that n begins with 1).

52. Find the **sum** of the first 100 terms of the **arithmetic** sequence whose nth term is $a_n = 9n - 6$ (assume that n begins with 1).



53. Find the sum: $\sum_{n=2}^{7} \frac{2}{n+3}$

54. Evaluate: $\sum_{n=1}^{\infty} 5\left(\frac{2}{3}\right)^{n-1}$