Name: Key Date:

Algebra 2: Function Unit Test #2 Review

Solving Equations:

1. $-12 = 2 + 5v + 2v$

$v = -2$

2. $10p + 9 - 11 - p = -2(2p + 4) - 3(2p - 2)$

$p = 0$

3. $-4k + 2(5k - 6) = -3k - 39$

$k = -3$

4. $15 = \frac{4x}{5} - 13$

$x = 35$

Solve for x and state any restrictions:

5. $zx + ty = p$

$x = \frac{p - ty}{z}$

$z \neq 0$

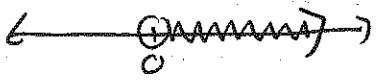
6. $\frac{x-2}{2} = m + n$

$x = 2m + 2n + 2$

Solving Inequalities, graph your solution:

7. $-2(1 - 5x) > -(x + 1) - 1$

$x > 0$

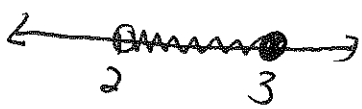


8. $3x - 10 > 3(x - 2)$

NO solution

9. $-33 \leq -7n - 12 < -26$

$2 < n \leq 3$



10. $2x - 3 < 11$ or $-8x - 10 < -82$

$x < 7$ or $x > 9$

Solving Absolute Value Equations and Inequalities:

11. $2 - 5|5m - 5| = -73$

$m = 4 \quad m = -2$

12. $4|6 - 2a| + 8 \leq 24$

no solution

$a \leq 5$

$1 \leq a \leq 5$

13. $\frac{|k|}{4} - 2 = 0$

$k = 8$

$k = -8$

14. $|2x + 8| = 3x + 7$

$x = 1$

15. $|3x - 5| = 4 + 2x$

$x = 9$

$x = 1/5$

16. $2|10b + 7| - 1 > 73$

$b > 6.6$ or $b < -8$

Function Notation:

Let: $f(x) = -x^2 + 1$ $g(x) = 2x^2 + 4x - 8$ $h(x) = 10 - 3x$ $k(x) = 5x^3 - 2x^2 + 3x$

17. Simplify: $g(x) - k(x)$

$-5x^3 + 4x^2 + 1x - 8$

18. Simplify: $h(x) \cdot f(x)$

monomial

$3x^3 - 10x^2 - 3x + 10$

19. Evaluate $f(-3)$

$f(-3) = -8$

20. Find x if $h(x) = 10$

$x = 0$

21. Evaluate $h(k(2))$

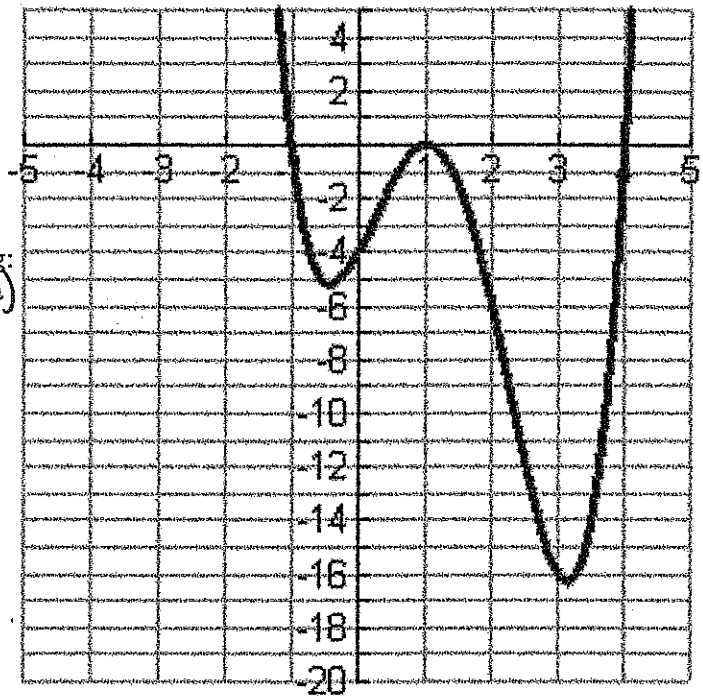
$= -104$

22. Evaluate $f(f(3))$

$= 0$

23. You are buying a new car. The dealer offers a 12% discount and a $2500 rebate and the dealer will let you use both sales. If the car you want to purchase costs $15250, what sale item should you use first and why? Discount first (use 12% first)

Function Questions: Use the graph below to answer all function questions.



24. Is it function?
Yes, every x has 1 y

25. Domain: $\mathbb{R}$ Range: $[-16.5, \infty)$

26. Intervals Increasing: $(-1/2, 1) \cup (2.2, \infty)$ Intervals Decreasing: $(-\infty, -.5) \cup (1, 2.2)$

27. Intervals Positive: $(-\infty, -1) \cup (4, \infty)$ Intervals Negative: $(-1, 1) \cup (1, 4)$

28. Critical Points:
relative max: 0
relative min: -5

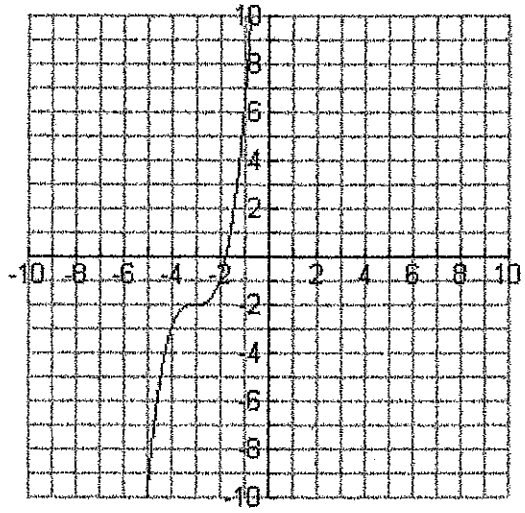
29. End Behavior:
As $x \to \infty$, $y \to \infty$
As $x \to -\infty$, $y \to \infty$

30. x- and y- intercepts:
x int: (-1,0) (1,0) (4,0)
y int: (0,-4)

30. Is the inverse a function?
No, every y does not have 1 x.

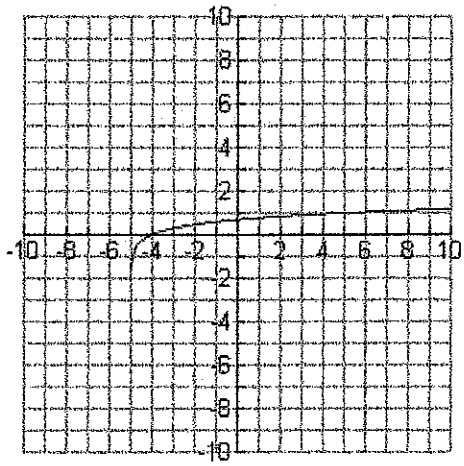
Families and Transformations:

31. Give the function family & transformations.
Give the function family and transformations



Cubic
Translate $f(x)=x^3$ 3 units left and 2 units down.

32.



Log
Translate $f(x)=\log(x)$ 5 units left and 2 units down

33. Write an equation for a "V" shaped graph that is dilated (shrunk) with a scale factor of 2/3, and shifted 5 spaces right and 2 spaces down.

$f(x) = \frac{2}{3}|x-5| - 2$

34. Write an equation for a quadratic function that is reflected over the x-axis and translated left 2.

$f(x) = -(x+2)^2$

35. Write an equation for an exponential function that is translated right 4 and down 8.

$f(x) = 2^{x-4} - 8$

36. Describe all the transformations for the function: $f(x) = 5(x-3)^3 + 6$

transform $f(x) = x^3$ by: stretch by factor of 5, translate right 3 up 6

37. Describe all the transformations for the function: $f(x) = -x^2 - 3$

reflect over x-axis and translate down 3

38. Describe all the transformations for the function: $f(x) = -4^{x-3} + 2$

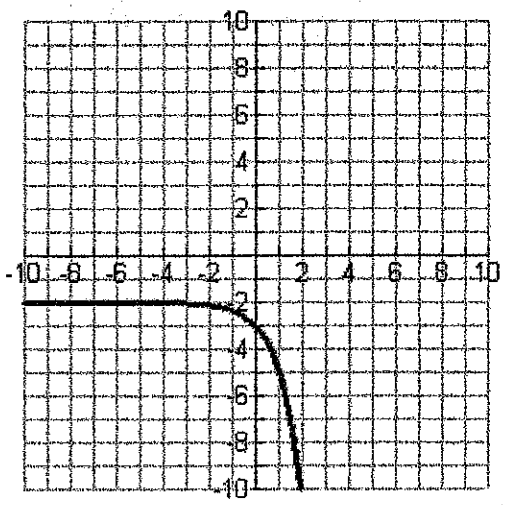
reflect the graph $f(x) = 4^x$ over the x-axis and translate right 3 and up 2

39. What family of functions does the graph below belong to?

Exponential

40. Is it function?

Yes it is a function; every x has 1 y



41. Domain: $\mathbb{R}$ Range: $(-\infty, -2)$

42. Intervals Increasing: Intervals Decreasing:

inc: never

dec: $(-\infty, \infty)$

43. Intervals Positive: Intervals Negative:

pos: never

neg: $(-\infty, \infty)$

44. Critical Points:

None

45. End Behavior: As $x \to \infty$, $y \to -\infty$

As $x \to -\infty$, $y \to -2$

46. x- and y- intercepts:

x int: none

y int: $(0, 3)$

47. Is the inverse a function?

Yes, every y has 1 x value