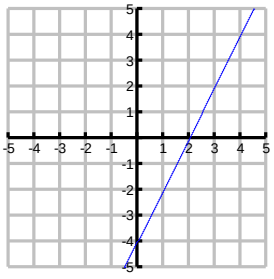
Review Worksheet for Unit 3 Test #1

Name_____ Class Period_____

For each of the functions find the following characteristics.

1.



Domain: _____

Range: _____

x-intercept(s): _____

y- intercept(s): _____

Interval of Increase: _____

Interval of Decrease: _____

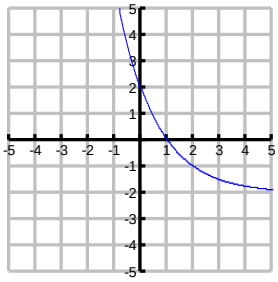
Max/Min Point:_____

Asymptote: _____

End Behavior: As x→ ∞ ,y→_____

As x→ −∞ ,y→_____

2.



Domain: _____

Range: _____

x-intercept(s):_____

y- intecept(s): _____

Interval of Increase: _____

Interval of Decrease:_____

Max/ Min Point: _____

Asymptote: _____

End Behavior: As x→ ∞ ,y→_____

As x→ −∞ ,y→_____

Function Notation. Find the following using the three given functions.

$f(x) = 2x - 4$ $g(x) = x^3 - 8$ $h(x) = x^2 - 3x$

3. $g(6)$

4. $h(-2)$

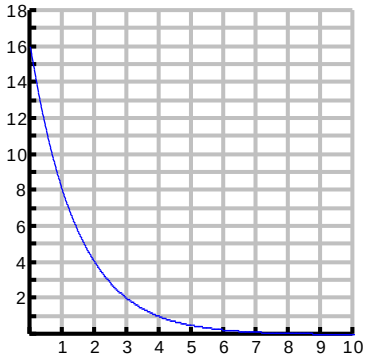
5. $f(5x+6)$

6. $3g(x)$

7. $2h(x) + 4g(x)$

8. $f(x) - h(x)$

Use the graph to answer the following.



9. f(2) = _____ 10. f(4) = _____

11. f(_____) = 8

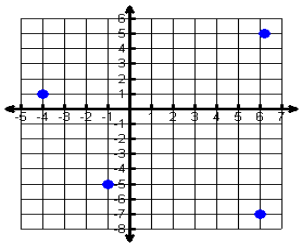
Determine whether the relation is a function. If it is a function, state the domain and range.

12. $\{(-3,0),(4,1),(-3,2)\}$

13.

Input	Output
-6	-13
-1	-7
4	-2
9	3

14.



Find the rate of change.

15. $(6,-3)(8,-2)$

16. $f(x) = -2x + 4,\ -3 \le x \le 2.$

17. From 2 years to 4 years.

t (Years)	1	2	3	4
f(t)	4	8	10	16

18. $g(x) = 3x - 2$ when $x_1 = 0$ and $x_2 = 4$.

Sequences

19. Write an **explicit** rule for the nth term. Then find a_{50}. 1, 5, 9, 13, …

20. Write an **explicit** rule for the nth term. Then find a_8. 8, 16, 32, 64, …

21. Write an **explicit** rule for the nth term. Then find a_{16}. 12, 6, 0, – 6, …

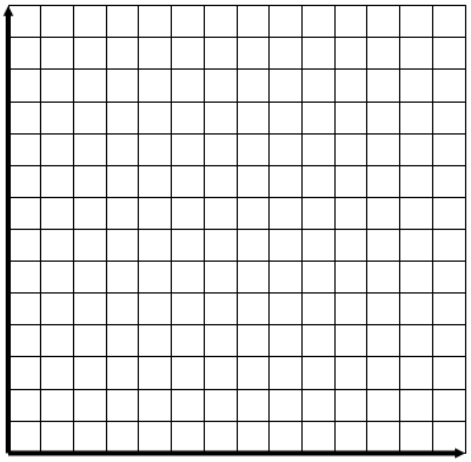
22. Write an **explicit** rule for the nth term. Then find a_{22}. –1, 5, –25, 125, …

Comparing Functions

23. Tim and Tom are twins. They both want to become good free throw shooters. They each devise a separate workout plan to get better at shooting free throws. Tim is going to start with 50 shots and increase by 20 each day. Tom is going to start with 20 shots and increase by 25 each day.

a) Write a function **<u>for each person</u>**.

b) Graph the functions.



c) At what **<u>point</u>** is Tom shooting more free throws than Tim. Justify your answer algebraically.

Simplify the expressions.

24. $\left(\frac{3}{4}\right)^{-3}$

25. $(15a^3b^4)^2$

26. x^{-2}

27. $\frac{m^5n^{-2}}{m^3n}$

28. $(-3x^3y^2)^3 \bullet (2xy^5)$

29. $\left(\frac{5a}{b^4}\right)^3 \bullet \left(\frac{a^5b^{-2}}{a^2}\right)^{-3}$

30. k(8k + 3) + (k + 7k)

31. $-7(x^2 + 2) - 6x(3x + 1)$

32. $5y(y^2 + 4y - 6) + y(y + 3)$