Name: _____ Per: ____

Integrated II: Unit 1 Study Guide

1. Simplify.
$(5x^2 - x + 8) + (-9x - 13)$

2. Simplify.
$(-2x^2 + 7x - 4) + (8x^2 - 6)$

3. Simplify.
$(6x^2 - 5x - 3) + (2x - 5)$

4. Simplify.
$(6x^5 - 2x^2) - (4x^3 + 5x^2 - 9)$

5. Simplify.
$(3x^4 + 5x^3) - (8x^3 + 6x^2 - 7)$

6. Simplify.
$(-2x^2 - x) - (6x^3 + 2x^2 - 4x)$

7. Determine the product.
$(x - 8)(6x + 5)$

8. Determine the product.
$(2x - 7)(x - 4)$

9. Determine the product.
$(x + 12)(3x - 2)$

10. Factor completely.
$x^2 + 6x + 8$

11. Factor completely.
$x^2 - 13x + 40$

12. Factor completely.
$x^2 - 7x - 18$

13. Factor completely.
$x^2 - 36$

14. Factor completely.
$x^2 - 25$

15. Factor completely.
$9x^2 - 4$

16. Factor completely.
$20x^2 - 45$

17. Factor completely.
$24x^2 - 54$

18. Factor completely.
$48x^2 - 75$

19. Determine if the relation below is linear or quadratic.

x	*y*
1	6
2	-2
3	-3
4	3
5	16

20. Determine if the relation below is linear or quadratic.

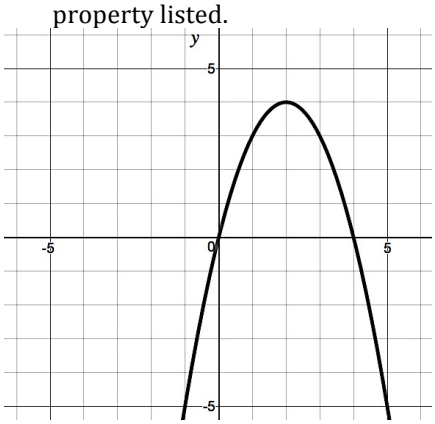
x	*y*
1	-2
2	2
3	6
4	10
5	14

21. Determine if the relation below is linear or quadratic.

x	*y*
1	8.5
2	7
3	5.5
4	4
5	2.5

Name: _____ Per: _____

22. The graph of a quadratic function is shown below. Identify each property listed.



Domain: _____

Range: _____

Zeros: _____

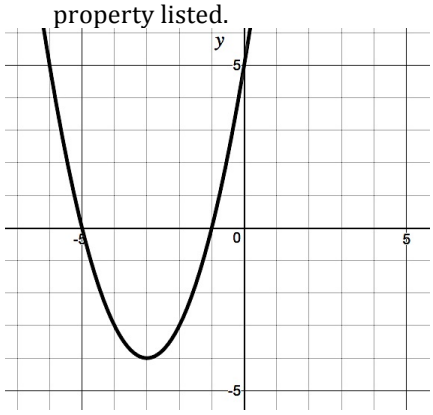
Interval of Increase: _____

Interval of Decrease: _____

x-intercept: _____

y-intercept: _____

23. The graph of a quadratic function is shown below. Identify each property listed.



Domain: _____

Range: _____

Zeros: _____

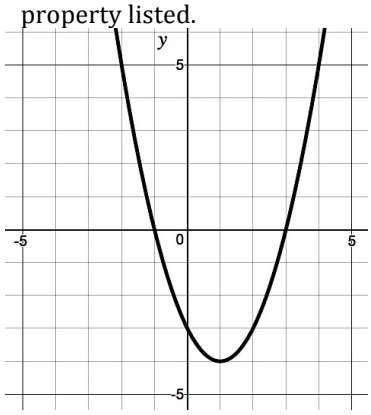
Interval of Increase: _____

Interval of Decrease: _____

x-intercept: _____

y-intercept: _____

24. The graph of a quadratic function is shown below. Identify each property listed.



Domain: _____

Range: _____

Zeros: _____

Interval of Increase: _____

Interval of Decrease: _____

x-intercept: _____

y-intercept: _____

25. Find the roots of the quadratic function below.

$f(x) = (x + 9)(x - 4)$

26. Find the roots of the quadratic function below.

$f(x) = -(x - 6)(x + 2)$

27. Find the roots of the quadratic function below.

$f(x) = (x)(x + 7)$

28. Write the function below in factored form; then find the roots. $f(x) = 5x^2 - 8x + 3$

29. Write the function below in factored form; then find the roots. $f(x) = 2x^2 + 13x + 21$

30. Write the function below in factored form; then find the roots. $f(x) = 4x^2 - 21x + 5$

31. Consider the function shown below.

$f(x) = x^2 + 2x - 8$

A) Find the vertex

B) Is it an absolute maximum or minimum? Justify your answer.

32. Consider the function shown below.

$f(x) = x^2 + 6x + 3$

A) Find the vertex

B) Is it an absolute maximum or minimum? Justify your answer.

33. Consider the function shown below.

$f(x) = x^2 + 10x - 2$

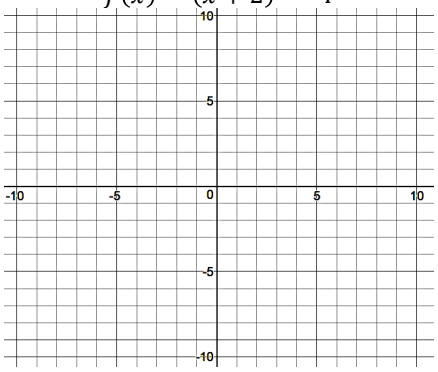
A) Find the vertex

B) Is it an absolute maximum or minimum? Justify your answer.

Name: _____ Per: ____

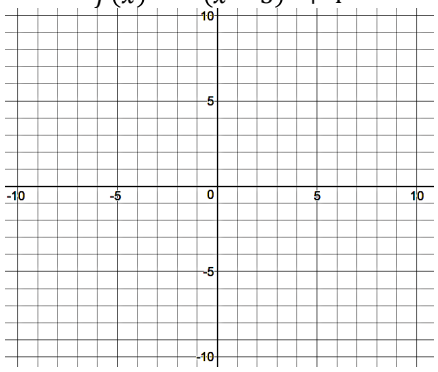
34. Graph the following quadratic function.

$f(x) = (x + 2)^2 - 4$



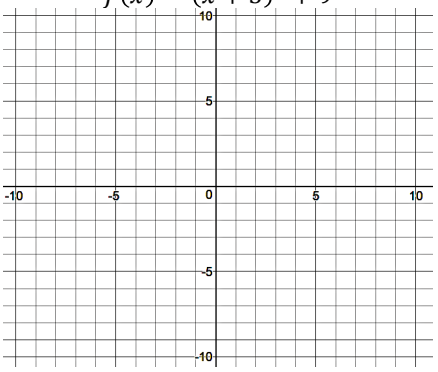
35. Graph the following quadratic function.

$f(x) = -(x - 3)^2 + 4$



36. Graph the following quadratic function.

$f(x) = (x + 5)^2 + 9$



37. In the game Happy Acres, crops are planted for harvest. As players level up, the amount of time it takes for plants to be ready increases. On the first level, a plant takes 6 minutes. The second level takes 9 minutes, the third level 14 minutes, the fourth level 21 minutes and so on and so forth.

A) Make a table that lists the level and the total minutes it takes.

B) What type of function can model this situation? Explain how you can identify the function type.

C) Write an equation that models the situation.

38. Stacy is selling lemonade. Her parents gave her $3.00 to start the day. Each cup she sells makes her $0.50. On the first cup, her total profit is $3.50. On the second cup, it's $4.00; the third is $4.50, the fourth $5.00, and so on and so forth.

A) Make a table that lists the number of cups sold and the total profit Stacy makes.

B) What type of function can model this situation? Explain how you can identify the function type.

A) Write an equation that models the situation.

39. A snail moves at a steady pace of 3 feet every minute. In one minute, it moves 3 feet. In two minutes, it moves 6 ft, three minutes is 9 ft, four is 12 ft, and so on and so forth.

A) Make a table that lists the number of minutes and the total feet it moves.

B) What type of function can model this situation? Explain how you can identify the function type.

A) Write an equation that models the situation.