Name: _____ Class: _____ Date: _____ ID: A

Review for Unit 1 Test

1. For the complex number $-10+4i$, identify the real part and the imaginary part.

2. Solve the equation. $4x^2+20=0$

Write the expression as a complex number in standard form.

3. $(-2+4i)-(3+9i)$

4. $(5-2i)-2(3+i)$

5. $-i+(7-5i)-3(2-3i)$

6. $(2+3i)(1-4i)$

7. $\dfrac{5}{1+i}$

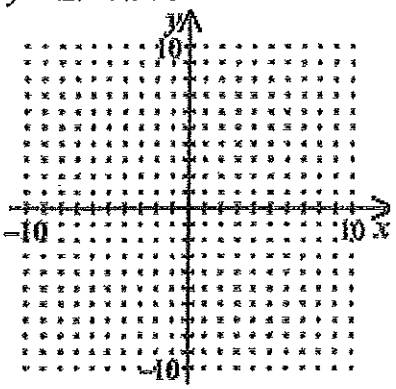
8. $\dfrac{3-3i}{4i}$

Find the absolute value of the complex number.

____ 9. $-2+5i$
a. 4.58 b. 21 c. 5.39 d. 29

Graph.

10. $y=2x^2+x+3$



11. Find the *vertex* and the *axis of symmetry* of the parabola. $y = -3x^2 + 12x - 8$

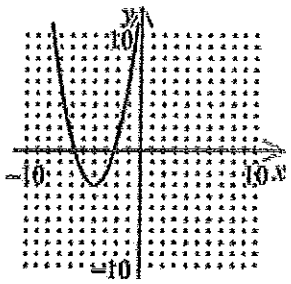
12. Find the *vertex* of the parabola and determine if it opens *up* or *down*. $y = 7 - 8x - 2x^2$

13. How would you translate the graph of $y = x^2$ to produce the graph of $y = x^2 + 6$?

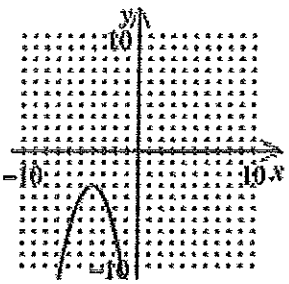
Write in standard form and graph.

____ 14. $y = (x+4)^2 - 3$

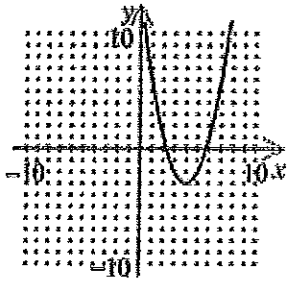
a. $y = x^2 + 8x + 13$



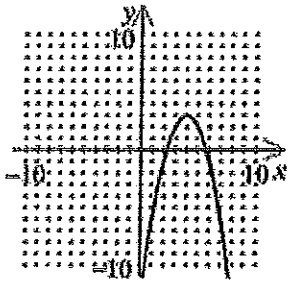
c. $y = -x^2 - 8x - 19$



b. $y = x^2 - 8x + 13$



d. $y = -x^2 + 8x - 19$



15. Writing: Explain how to obtain the graph of $y = (x+3)^2 - 2$ from the graph of $y = x^2$. Then describe the graph of $y = (x+3)^2 - 2$.

Factor the expression.

16. $x^2 + 4x + 4$

17. Solve by factoring: $x^2 - 18x + 81 = 0$

____ 18. What are the solutions to the equation?
$x^2 = 3x + 54$
a. $x = 1$ or $x = -54$
b. $x = 54$ or $x = -1$
c. $x = 6$ or $x = -9$
d. $x = 9$ or $x = -6$

Find the zeros of the equation.

19. $x^2 + 4x - 5 = y$

20. Factor the expressions $x^2 - 5x - 14$ and $x^2 + 5x - 14$. *Explain* how to use the factors to find the zeros of the functions $f(x) = x^2 - 5x - 14$ and $g(x) = x^2 + 5x - 14$. *Describe* the difference between the zeros of $f(x)$ with the zeros of $g(x) = x^2 + 5x - 14$.

Factor.

____ 21. $4x^2 - 36$
a. $(4x - 1)(x + 36)$
b. $(2x - 6)(2x - 6)$
c. $(2x + 6)(2x - 6)$
d. $(4x + 1)(x - 36)$

22. Write as the product of two factors: $12h^2 - 31h + 20$

23. Write as a product of factors.
$10x^2 - 17x - 20$

Solve.

24. $3x^2 - 13x + 14 = 0$

____ 25. Use the quadratic formula to solve: $x^2 - 3x - 1 = 0$
a. $\frac{-3 + \sqrt{5}}{2}, \frac{-3 - \sqrt{5}}{2}$
b. $\frac{3 + \sqrt{5}}{2}, \frac{3 - \sqrt{5}}{2}$
c. $\frac{3 + \sqrt{13}}{2}, \frac{3 - \sqrt{13}}{2}$
d. $\frac{-3 + \sqrt{13}}{2}, \frac{-3 - \sqrt{13}}{2}$

Solve.

____ 26. $5x^2 + 3x = -4$

a. $\frac{-3+i\sqrt{89}}{10}, \frac{-3-i\sqrt{89}}{10}$

b. $\frac{3+i\sqrt{71}}{10}, \frac{3-i\sqrt{71}}{10}$

c. $\frac{3+i\sqrt{89}}{10}, \frac{3-i\sqrt{89}}{10}$

d. $\frac{-3+i\sqrt{71}}{10}, \frac{-3-i\sqrt{71}}{10}$

27. State the discriminant of the quadratic. $5x^2 - 3x - 12 = 0$

28. Use the discriminant to determine the number of real solutions of the equation. $4x^2 - 3x - 7 = 0$

29. Use the discriminant to determine the number of real solutions of the equation. $5x^2 - 3x + 1 = 0$

30. Find the first four terms of the sequence $a_n = n(3n-6)$.

Write the next three terms of the geometric sequence. Then write a variable expression for the *n*th term and evaluate it for $n = 9$.

31. 49; 343; 2401; 16,807; . . .

Find the sum of the series.

32. $\sum_{k=1}^{4}\left(k^2+2\right)$

Write a rule for the *n*th term of the arithmetic sequence.

33. –12, –5, 2, 9, . . .

34. Write a rule for the *n*th term of the arithmetic sequence with $a_1 = -7$ and the common difference of $\frac{5}{2}$.

35. What is the first term of an arithmetic sequence with a common difference of 5 and a sixth term of 40?

36. What is the first term of an arithmetic sequence with a common difference of –7 and a seventh term of 40?

____ 37. Find the sum of the first 12 terms of the arithmetic series.
$-7+1+9+17+\ldots$
a. 436 b. 888 c. 452 d. 444

38. Find the sum of the first 25 terms of the arithmetic series.
$8+15+22+29+\ldots$

39. Find the common difference of the arithmetic sequence.
$\frac{1}{2}, \frac{1}{6}, -\frac{1}{6}, -\frac{1}{2}, \cdots$

40. Two terms of an arithmetic sequence are $a_5 = 11$ and $a_{32} = 65$. Find a rule for the nth term.