LESSON 85 Review: Quadratic Equations and Functions

Try to complete as fast as you can. You may use a calculator unless otherwise specified.

1. Which number is NOT real?

A) 3.14 B) 3π

C) $4i$ D) all real

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

Simplify the expression above. Write your answer in the form $a+bi$.

3. $x^2+x-6=0$

What are the solutions to the equation above?

4. $x^2-2x+4=0$

What values of x satisfy the equation above?

A) $1\pm\sqrt{3}$ B) $-1\pm\sqrt{3}$

C) $1\pm i\sqrt{3}$ D) $-1\pm i\sqrt{3}$

5. $x^2-px=px-q$

Given the equation above, what are the values of x in terms of p and q ?

A) $x=p\pm\sqrt{p^2+q}$

B) $x=p\pm\sqrt{p^2-q}$

C) $x=-p\pm\sqrt{p^2+q}$

D) $x=-p\pm\sqrt{p^2-q}$

6. $kx^2+6x+1=0$

For what value of k does the equation above have exactly one solution?

7. $kx^2-2x+6=0$

In the equation above, if the product of the solutions is 3, what is the sum of the solutions?

8. Write a quadratic equation in standard form whose leading coefficient is 1 and whose solutions are $2+i$ and $2-i$.

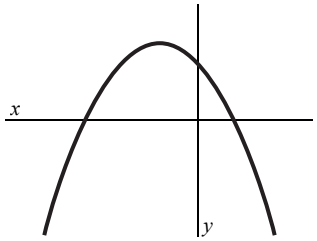
9. The product of two positive consecutive even integers is 48. What are the integers?

10. The area of a rectangle is 35 cm^2. Its length is 2 cm longer than its width. What is the perimeter of the rectangle?

11. $f(x)=(x+1)^2+2$

In which quadrant does the vertex of the graph of the function above lie?

12. $f(x) = a(x+3)(x-k)$ is graphed below. Which statement is true?



A) $a > 0, k > 0$ B) $a > 0, k < 0$

C) $a < 0, k > 0$ D) $a < 0, k < 0$

13. $f(x) = x^2 - 3x - 4$

At which values of x does the graph of the function above intersect the x-axis?

14. $f(x) = a(x-2)(x-4)$

If the graph of the function above is a parabola with vertex $(h, -3)$, what is the value of a ?

15. $f(x) = 2x^2 + 4x + k$

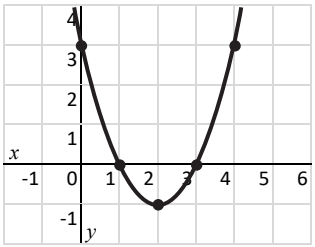
For which value of k does the graph of the function above have no x-intercepts?

A) 0 B) 1

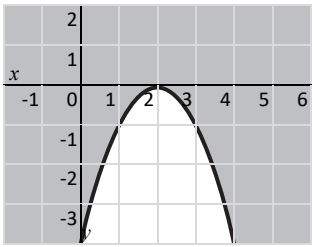
C) 2 D) 3

16. The graph of $g(x)$ is the graph of $f(x) = x^2$ shrunk (compressed) vertically by a factor of $1/2$ and shifted left 4 units. Write $g(x)$ in standard form.

17. Write the function graphed below in standard form. Use y instead of $f(x)$.



18. Write the quadratic inequality graphed below in standard form.



19. $x^2 + 5x > 6$

Solve the quadratic inequality above.

20. $h(t) = -16t^2 + 32t + 36$

A ball is thrown straight up from a height of 36 feet with an initial speed of 32 feet per second. The function above gives its height h, in feet, after t seconds. What is the maximum height reached by the ball?

21. (CHALLENGE) If $k(x-1)(x-2) = 0$ and $x < 0$, what is the value of k?