Quadratic function - CKE exercises

Basic level

Ex. 1. Find the vertex of a quadratic function given by a formula $f(x) = -3x^2 + 3$.

Ex. 2. Find the equation of the axis of symmetry of a parabola $y = x^2 + 4x - 13$.

Ex. 3. What is the image of a quadratic function $f(x) = x^2 - 4$?

Ex. 4. Find the vertex of a quadratic function given by a formula $f(x) = x^2 - 4x + 4$.

Ex. 5. The parabola is given by the equation $y = x^2 + 8x - 14$. Find the first coordinate of a vertex of this parabola.

Ex. 6. The vertex of a parabola $y = (x-1)^2 + 2c$ belongs to the line $y = 6$. Find c.

Ex. 7. The point $W(4,\ 0)$ is a vertex of a parabola $y = 2x^2 + bx + c$. Find the coefficients b and c.

Ex. 8. The number $-\frac{7}{3}$ is one of the zeros of a quadratic function $f(x) = 3x^2 + 7x + c$. Find c.

Ex. 9. Find the image of a quadratic function given by a formula $f(x) = -(x-2)^2 - 3$.

Ex. 10. The quadratic function is given by a formula $f(x) = x^2 + x + c$. We know that $f(3) = 4$. What is the value of an expression $f(1)$?

Ex. 11. The quadratic function f reaches its maximum, which equals 4, for $x = -3$. The point $A(-1, 3)$ belongs to a graph of this function. Find the formula of the function f.

Ex. 12. The point W(2,2) is the vertex of a function $y = f(x)$. Find the coordinates of a vertex of a function $g(x) = f(x+2)$.

Ex. 13. The formula of a quadratic function is $f(x) = ax^2 + bx + c$. The maximum value of a function equals 6 and $f(-6) = f(0) = \frac{3}{2}$. Find a.

Ex. 14. Point $A(0,\ -5)$ belongs to the parabola $y = x^2 + bx + c$. The line $x = 7$ is the axis of symmetry of this parabola. Find the values of coefficients b and c.

Ex. 15. Find the zeros of a function $f(x) = 9 - (3-x)^2$.

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