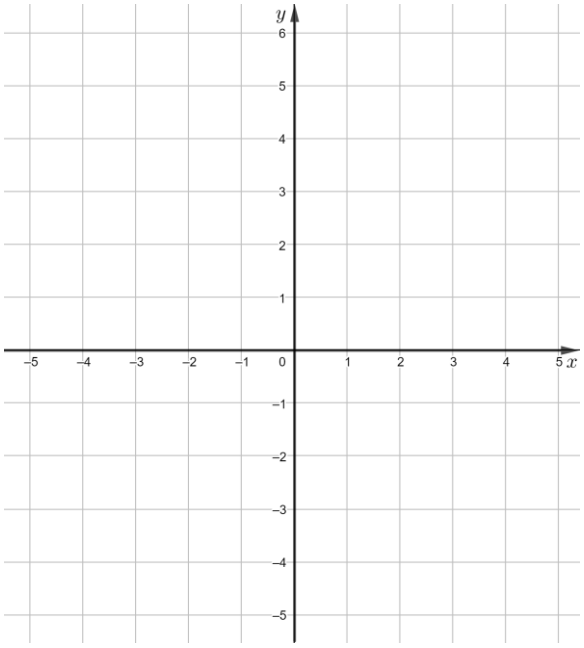
Vertex and general forms of a quadratic function

Task 1. A quadratic function f is defined by vertex form $f(x) = 3(x+1)^2 - 4$.

(a) Write down coordinates of the vertex V of parabola which is the graph of the f. ……

(b) Write down coordinates of the point P, where the graph of f intersects the y-axis. ……

(c) Sketch the graph of f.



(d) Write down the equation of the line of symmetry of the graph of f. ……

(e) Write down the range of the function f.

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(f) Describe monotonicity intervals of the function f.

The function f increases in the interval

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The function f increases in the interval

…….

(g) Write down the general form of the function f

$f(x) =$ ……..

Task 2. Calculate coefficients b i c in the formula of a quadratic function $y = 4x^2 + bx + c$, knowing that the points $A(2, 27)$ and $B(-2, 3)$ lie on the graph of this function.

Task 3. Work out the vertex form for the quadratic function f, knowing that the interval $[2, \infty)$ is the range of f and $f(-2) = f(-4) = 5$.