More on Quadratic Functions

Completing the Square

Solve the following quadratic equations using the square root property (if $x^2=k$, then $x=\pm\sqrt{k}$).

$2x^2 = 10$

The solution set is _____

$(x-2)^2 = 16$

The solution set is _____

$t^2 + 6t + 9 = 0$

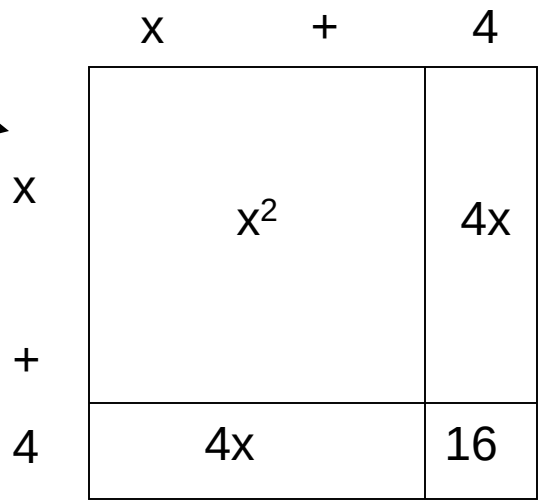
The solution set is _____

$4r^2 - 20r + 25 = 7$

The solution set is _____

Replace the blanks in each equation with constants to complete the square and form a true equation.

1) $x^2 + 8x + \_\_\_\_ = (x + \_\_\_\_)^2$



2) $x^2 - 18x + \_\_\_\_ = (x - \_\_\_\_)^2$

3) $x^2 + 3x + \_\_\_\_ = (x + \_\_\_\_)^2$

4) $x^2 - \frac{5}{3}x + \_\_\_\_ = (x - \_\_\_\_)^2$

For a polynomial ax^2+bx, the constant needed to make a perfect square trinomial is $\left(\frac{b}{2}\right)^2$. Solve the following equations by completing the square.

$x^2+8x=9$

The solution set is _____

$r^2-10r-22=0$

The solution set is _____

For a polynomial ax^2+bx, the constant needed to make a perfect square trinomial is $\left(\frac{b}{2}\right)^2$. Solve the following equations by completing the square.

$x^2 - x = 2$

The solution set is _____

$x^2 + 5x + 3 = 0$

The solution set is _____

For a polynomial ax^2+bx, the constant needed to make a perfect square trinomial is $\left(\frac{b}{2}\right)^2$. Solve the following equations by completing the square.

$2x^2-5x-3=0$

The solution set is _____

$4x^2-6x-1=0$

The solution set is _____

Use the process of completing the square in order to write each quadratic function in vertex form. Then determine the vertex and domain and range of the function.

$p(x) = x^2 - 6x - 7$

Vertex: _____

Domain:_____

Range:_____

$r(x) = x^2 + 5x - 4$

Vertex: _____

Domain:_____

Range:_____

Use the process of completing the square in order to write each quadratic function in vertex form. Then determine the vertex, domain, range, and maximum or minimum of the function.

$f(x) = -3x^2 + 6x + 1$

Vertex: _____

Domain:_____

Range:_____

Maximum:_____

$r(x) = 2x^2 + 3x + 5$

Vertex: _____

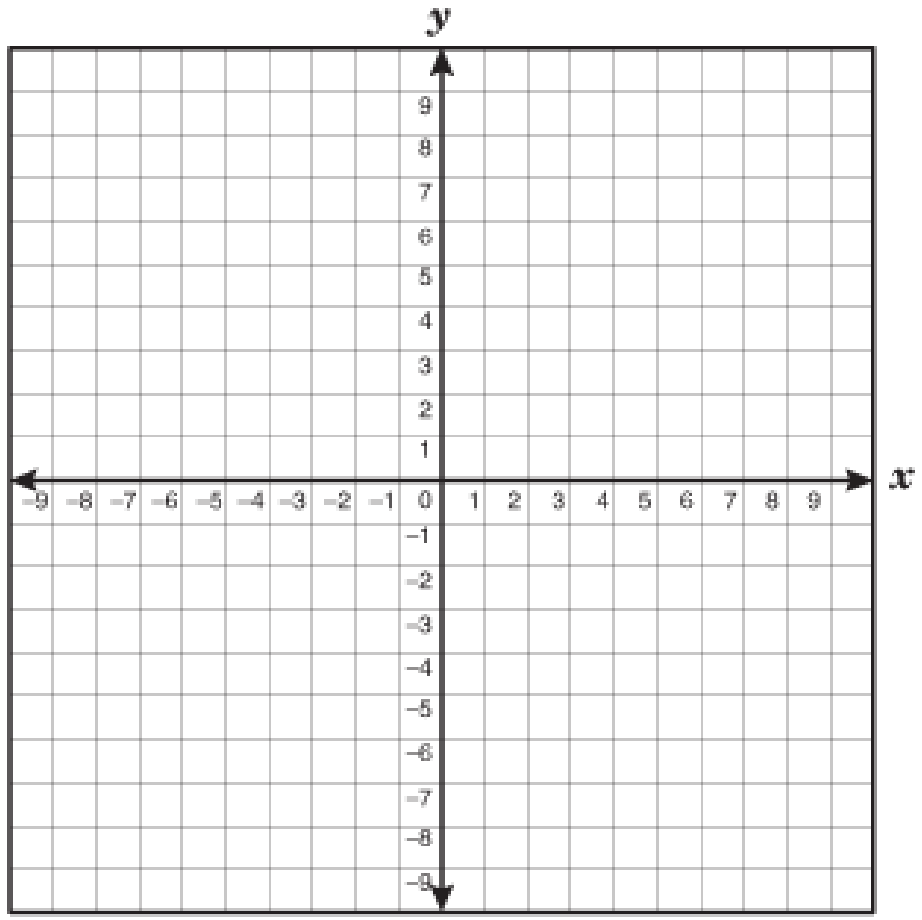
Domain:_____

Range:_____

Minimum:_____

Find the key features of the graph of the following function (y-intercept, x-intercepts, and vertex) and sketch the graph of *y=g(x)*.

$g(x) = -x^2 + 6x - 8$



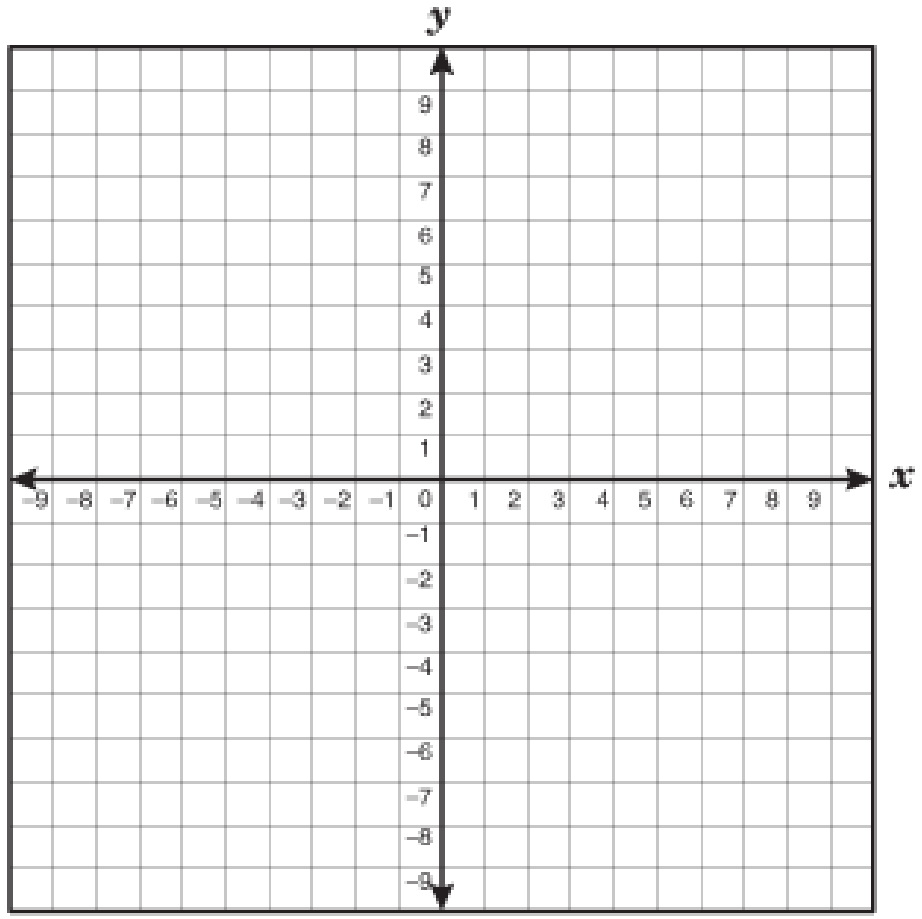
y-intercept:_____

x-intercept/s:_____

Vertex:_____

Find the key features of the graph of the following function (y-intercept, x-intercepts, and vertex) and sketch the graph of *y=f(x)*.

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



y-intercept:_____

x-intercept/s:_____

Vertex:_____