Imię i nazwisko:
Klasa:
Grupa 1
Wynik:

(P) Question 1 ***(1 pt)***
For what value of p are the lines $y = px - 3$ and $y - 2x + p = 0$ perpendicular?

A. $-\frac{1}{2}$ B. -1 C. $\frac{1}{2}$ D. 2

(P) Question 2 ***(1 pt)***
The vertex of the parabola $y = 2(x-1)(x+7)$ has coordinates:

A. $(3, 40)$ B. $(-3, -32)$ C. $(4, 66)$ D. $(-4, -30)$

(P) Question 3 ***(1 pt)***
The range of the function $y = 4 - x^2 + 3x$ is:

A. $(1.5, \infty)$ B. $\langle 6.25, \infty)$ C. $(-\infty, 6.25\rangle$ D. $(-\infty, -6.25\rangle$

(P) Question 4 ***(1 pt)***
How many integers satisfy the inequality $(x-4)(x+3) < 0$

A. 6 B. 7 C. 8 D. infinitely many

(R) Question 5 ***(1 pt)***
How many real solutions does the equation $2x^8 + 5x^4 - 7 = 0$ has?

A. 0 B. 2 C. 4 D. 8

(P) Question 6 ***(2 pts)***

Solve the inequality:

$$2x^2 - 5x - 12 \leqslant 0$$

(P) Question 7 ***(4 pts)***

A right triangle has a perimeter equal to 30. It's hypotenuse is 1 unit longer than one of the remaining sides. Find the area of this triangle.

(R) Question 8 ***(3 pts)***

Sketch the graph of $y = |\sqrt{|x+1|} - 1|$. Solve:

$$|\sqrt{|x+1|} - 1| = 1$$

(R) Question 9 ***(3 pts)***

A wire of length 1m has been cut into two pieces. The first piece has been bent into a square, the second piece has been bent into a circle. What should the lengths of the pieces be, so that the total area of the square and the circle is minimal.

(R) Question 10 ***(3 pts)***

Find the points on the graph of the curve $y = x^2 + 1$ which are closest to the point $(0, 4)$.