Quadratic Functions & The Discriminant: Part 2

1) What is the solution of $x^2 + 4x > 0$, where x is a real number?

2) The discriminant of a quadratic equation is 23.

Here are two statements about this quadratic equation:

(1) the roots are real;

(2) the roots are rational.

Which of the following is true?

A Neither statement is correct.

B Only statement (1) is correct.

C Only statement (2) is correct.

D Both statements are correct.

3)

If $f(x) = (x - 3)(x + 5)$, for what values of x is the graph of $y = f(x)$ above the x-axis?

4)

If $2x^2 - 12x + 11$ is expressed in the form $2(x - b)^2 + c$, what is the value of c?

5)

For what value of k does the equation $x^2 - 3x + k = 0$ have equal roots?

6)

Prove that the roots of the equation $2x^2 + px - 3 = 0$ are real for all values of p.

7)

(*a*) Show that the function $f(x) = 2x^2 + 8x - 3$ can be written in the form $f(x) = a(x + b)^2 + c$ where a, b and c are constants.

(*b*) Hence, or otherwise, find the coordinates of the turning point of the function f.

8)

The roots of the equation $(x - 1)(x + k) = -4$ are equal.

Find the values of k.