Quadratics (Credit Past Paper quest 2003 – 2007)

2. Solve the equation

(P2)

$$3x^2 - 2x - 10 = 0.$$

Give your answer **correct to 2 significant figures**.
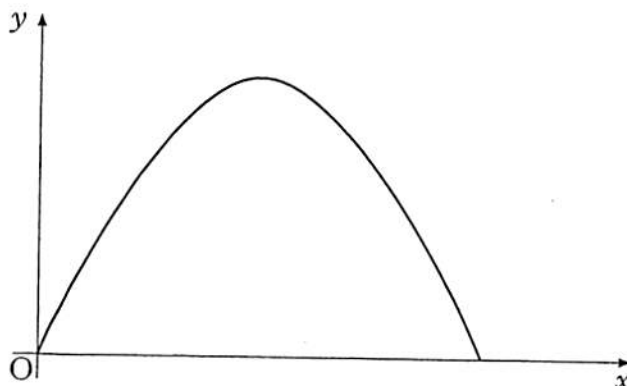

E 3. The profit made by a publishing company of a magazine is calculated by the formula

(P2)

$$y = 4x(140 - x),$$

where y is the profit (in pounds) and x is the selling price (in pence) of the magazine.

The graph below represents the profit y against the selling price x.

Find the maximum profit the company can make from the sale of the magazine.
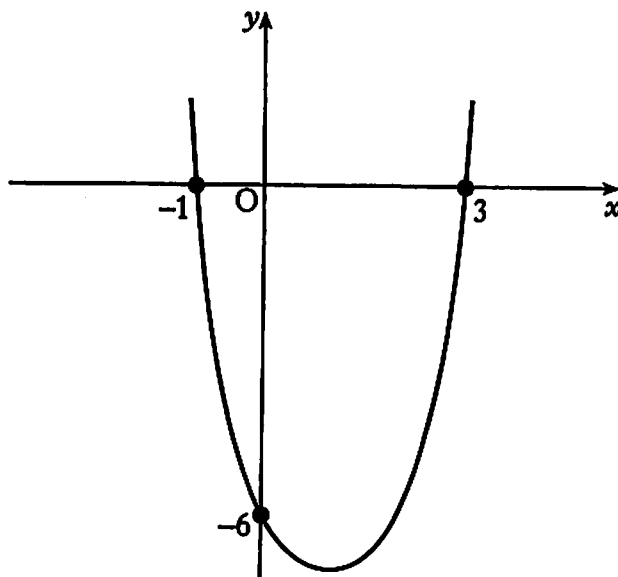
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8. The graph of $y=x^2$ has been moved to the position shown in Figure 1.

(P1)

Figure 1

The equation of this graph is $y=(x-2)^2+3$.

The graph of $y=x^2$ has now been moved to the position shown in Figure 2.

Figure 2

Write down the equation of the graph in Figure 2.

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(A) 8. The diagram below shows part of the graph of a quadratic function, with
(P2) equation of the form $y = k(x - a)(x - b)$.

The graph cuts the y-axis at $(0, -6)$ and the x-axis at $(-1, 0)$ and $(3, 0)$.

(a) Write down the values of a and b.

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(b) Calculate the value of k.

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(c) Find the coordinates of the minimum turning point of the function.
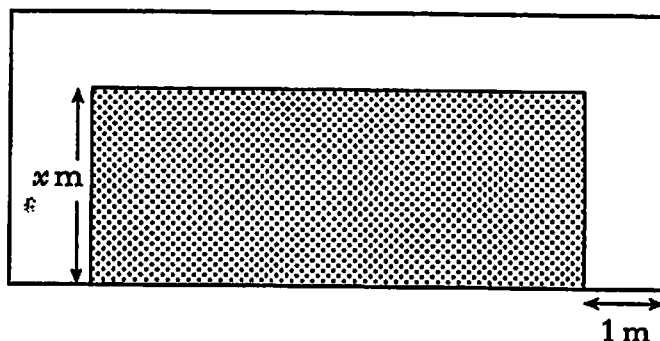
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(B)
11. A rectangular lawn has a path, 1 metre wide, on 3 sides as shown.
(P2)

x m

1 m

The breadth of the lawn is x metres.

The length of the lawn is three times its breadth.

The area of the lawn equals the area of the path.

(a) Show that $3x^2 - 5x - 2 = 0$.

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(b) Hence find the **length** of the lawn.

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