NCERT Mathematics 11.9.3 Q32

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Question: If A.M. and G.M. of roots of a quadratic equation are 8 and 5,respectively,then obtain the quadratic equation.

Solution:

Parameter	Description	Value
$\frac{r_1+r_2}{2}$	A.M. of roots	8
$\sqrt{r_1 \cdot r_2}$	G.M. of roots	5

TABLE I
INPUT PARAMETERS

r_1 and r_2 be the roots of $ax^2 + bx + c = 0$.

$$r_1 \cdot r_2 = 25 \tag{1}$$
$$\implies c = 25 \tag{2}$$
$$r_1 + r_2 = 16 \tag{3}$$
$$\implies b = -16 \tag{4}$$
$$\implies x^2 - 16x + 25 = 0 \tag{5}$$

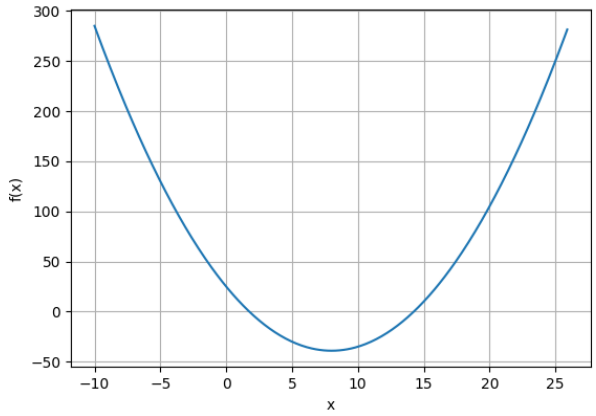

Fig. 1. Plot of $f(x) = x^2 - 16x + 25$