Write at top of first page of answer paper (a) name of school where you have studied, (b) number of weeks and recitations a week in elementary algebra.

The minimum time requirement is five recitations a week for a school year.

Answer the first four questions and four of the others. Credit will not be granted unless all operations (except mental ones) necessary to find results are given; simply indicating the operations is not sufficient. Each answer should be reduced to its simplest form.

1 Divide $9x^6 - 10x^3 + 9 - 16x^2 - x^4$ by $4x - x^2 + 3x^3 - 3$ [Credit will not be granted if there is any error in the work.]

2 Factor each of the following: $x^4 - x^2 - 12$; $(a + 2)^2 - 9x^2$; $x^3 - 27$; $6x^2 - x - 2$; $x^5 + 32$; $a^3 - a^2 - a + 1$

3 Solve \[
\begin{align*}
2x + y &= a + 1 \\
x - 2y &= a - 1
\end{align*}
\]

4 The length of a rectangular field is twice its width; it costs as much to fence it at 50¢ per yard as it does to sod it at 15¢ a square yard. Find the dimensions.

5 Solve $2 + \sqrt{2x + 8} = 2\sqrt{x + 5}$

6 Solve $x^2 + ax = 42a^2$

Expand by the binomial formula $(2a - 3b)^5$, giving all the work.

7 Solve \[
\begin{align*}
x^2 + y^2 &= 13 \\
x y &= 6
\end{align*}
\]

Group the four pairs of roots properly.

8 Two men start at the same time and travel in opposite directions; the ratio of their rates is 2:3 and in 5 hours they are 100 miles apart. Find the rate of each.

9 Divide the number $c$ into two parts such that $a$ times the larger part shall equal $b$ times the smaller part.

10 If a triangle with equal sides has its sides increased 7 inches, 4 inches and 1 inch respectively, a right triangle is formed; find the sides of the right triangle.