

blems like the following may be solved like ordinary arithmetical problems in "Reduction Descending."

EXAMPLES.

1. Find the value of $x^2 - 2x - 9$ when $x = 5$.

$$\begin{array}{r} x^2 - 2x - 9 \\ 5 \\ \hline 5x \\ - 2x \\ \hline 3x \\ 5 \end{array}$$

$$\begin{array}{r} 15 \\ - 9 \\ \hline 6 \end{array}$$

Explanation.

$$\begin{aligned} x^2 &= 5x, \\ \therefore x^2 - 2x &= 3x = 15, \text{ and} \\ \therefore x^2 - 2x - 9 &= 15 - 9 = 6. \end{aligned}$$

2. Find the value of $x^4 - x^3 - 4x^2 - 3x - 5$ when $x = 3$.

$$\begin{array}{r} x^4 - x^3 - 4x^2 - 3x - 5 \\ 3 \\ \hline \end{array}$$

$$\begin{array}{r} p_1 \dots\dots 3x^3 \\ - x^3 \\ \hline \end{array}$$

$$\begin{array}{r} r_1 \dots\dots 2x^3 \\ 3 \\ \hline \end{array}$$

$$\begin{array}{r} p_2 \dots\dots 6x^2 \\ - 4x^2 \\ \hline \end{array}$$

$$\begin{array}{r} r_2 \dots\dots 2x^2 \\ 3 \\ \hline \end{array}$$

$$\begin{array}{r} p_3 \dots\dots 6x \\ - 3x \\ \hline \end{array}$$

$$\begin{array}{r} r_3 \dots\dots 3x \\ 3 \\ \hline \end{array}$$

$$\begin{array}{r} p_4 \dots\dots 9 \\ - 5 \\ \hline \end{array}$$

$$\begin{array}{r} r_4 \dots\dots 4. \end{array}$$

$$\begin{aligned} \therefore x^4 - x^3 - 4x^2 - 3x - 5 &= 4 \\ \text{if } x &= 3. \end{aligned}$$

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