Exercise 2B

Question 12:

1 and -2 are the two zeros of the polynomial $x^3 - 4x^2 - 7x + 10$

Dividing the polynomial by $x - 1$

$$
\begin{array}{r|l}
 & x^2 - 3x - 10 \\
\hline
x - 1 & x^3 - 4x^2 - 7x + 10 \\
 & x^3 - x^2 \\
 & \quad - \quad + \\
\hline
 & \quad -3x^2 - 7x \\
 & \quad -3x^2 + 3x \\
 & \quad + \quad - \\
\hline
 & \quad\quad -10x + 10 \\
 & \quad\quad -10x + 10 \\
 & \quad\quad + \quad - \\
\hline
 & \quad\quad\quad 0 \\
\hline
\end{array}
$$

Quotient $q(x) = x^2 - 3x - 10$

2 is a zero of given polynomial so it is a zero of $x^2 - 3x - 10$

Dividing $x^2 - 3x - 10$ by $x + 2$

$$
\begin{array}{r|l}
 & x - 5 \\
\hline
x + 2 & x^2 - 3x - 10 \\
 & x^2 + 2x \\
 & \quad - \quad - \\
\hline
 & \quad -5x - 10 \\
 & \quad -5x - 10 \\
 & \quad + \quad + \\
\hline
 & \quad\quad 0 \\
\hline
\end{array}
$$

Third zero of the given polynomial is given by $x - 5 = 0$ or $x = 5$

Question 13:

3 and -3 are the two zeros of the polynomial
$x^4 + x^3 - 11x^2 - 9x + 18$

$\therefore (x-3)(x+3) = x^2 - 9$ is a factor of given polynomial

$\therefore$ Dividing the given polynomial by $x^2 - 9$

$$
\begin{array}{r|l}
x^2 - 9 & \mathbf{x^2 + x - 2} \\
\hline
 & x^4 + x^3 - 11x^2 - 9x + 18 \\
 & x^4 \quad\quad - 9x^2 \\
 & - \quad\quad\quad + \\
\hline
 & \mathbf{x^3 - 2x^2 - 9x} \\
 & \mathbf{x^3 \quad\quad - 9x} \\
 & - \quad\quad\quad + \\
\hline
 & -2x^2 \quad +18 \\
 & -2x^2 \quad +18 \\
 & + \quad\quad - \\
\hline
 & 0
\end{array}
$$

$\therefore$ Quotient $q(x) = x^2 + x - 2$

Other zeros of given polynomial are -2 and 1
So zeros of given polynomial are 1, -2, 3 and -3

********** END **********