AI1110 Assignment-1
ICSE Class-10 2017

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Q4(a): What must be subtracted from $16x^3 - 8x^2 + 4x + 7$ so that the resulting expression has $2x + 1$ as a factor?

Solution: Let $p(x) = 16x^3 - 8x^2 + 4x + 7$ and $d(x) = 2x + 1$.

Polynomial division of $p(x)$ with $d(x)$:

$$
\begin{array}{r}
8x^2 - 8x + 6 \\
\hline
2x+1) 16x^3 - 8x^2 + 4x + 7 \\
-16x^3 - 8x^2 \\
\hline
-16x^2 + 4x \\
16x^2 + 8x \\
\hline
12x + 7 \\
-12x - 6 \\
\hline
1
\end{array}
$$

From the above division, it is clear that 1 has to be subtracted from the polynomial $p(x)$, so that $d(x)$ becomes factor of the resulting polynomial after subtraction.