#20. $f(1) = 1^3 - 2\cdot1 - 1 = -2 < 0$

$f(2) = 2^3 - 2\cdot 2 - 1 = 3 > 0$

Since $f(1)$ and $f(2)$ have opposite signs, by Intermediate Value Theorem, f has at least one zero between 1 and 2.

#21.

$$
\begin{array}{r|l}
 & -x^2 + 2x - 1 \\
\hline
-x+1 & x^3 - 3x^2 + 3x + 4 \\
 & x^3 - x^2 \\
\hline
 & -2x^2 + 3x \\
 & -2x^2 + 2x \\
\hline
 & x + 4 \\
 & x - 1 \\
\hline
 & 5
\end{array}
$$

Remainder = 5

Quotient = $-x^2 + 2x - 1$

#22

$$
\begin{array}{r|rrrr}
1 & 1 & -3 & 3 & 4 \\
 & & 1 & -2 & 1 \\
\hline
 & 1 & -2 & 1 & \boxed{5}
\end{array}
$$

Remainder = 5

Quotient = $x^2 - 2x + 1$