1. What is the Maple command to plot the function \( f(x) = \frac{15(x-2)}{x^2-3x+4} \) on the domain \([-10, 10]\) and a restricted range of \([-10, 10]\)? Do so and draw the result below.

**Solution:** `plot((15*(x-2))/(x^2-3*x+4), x=-10..10, y=-10..10);`

\[
\begin{align*}
\text{\includegraphics{plot.png}}
\end{align*}
\]

2. What are the exact solutions to the equation \( x^3 - 7x^2 - 3x + 5 = 0 \)? Also state the Maple command(s) you used to find them.

**Solution:** `solve(x^3-7*x^2-3*x+5=0, x);` which gives \(-1, 4 + \sqrt{11}, \text{ and } 4 - \sqrt{11} \).

3. Give approximations to all of the real roots to \( f(x) = x^3 - 4x^2 - 7 \) to at least 15 decimal places. Also state the Maple command(s) you used to find them.

**Solution:** `solve(x^3-4*x^2-7=0, x);` followed by `evalf(%, 20);` which gives approximations for all three roots but the only one we asked for was \( 4.367047455257897521 \).

4. State the Maple commands you would use to find the following limits. What are the limits?

\[
\begin{align*}
\lim_{x \to \infty} \sqrt{9x^2-x} - 3x & \quad \lim_{x \to -\infty} \sqrt{9x^2-x} - 3x \\
\end{align*}
\]

**Solution:** `limit(sqrt(9*x^2-x)-3*x, x=infinity);` which gives \(-\frac{1}{6}\) and `limit(sqrt(9*x^2-x)-3*x, x=-infinity);` which gives \( \infty \).

5. Using the definition of the derivative, \( \lim_{h \to 0} \frac{f(x+h) - f(x)}{h} \), use Maple to find the derivative of \( f(x) = \sqrt{x-4} \). Also state the Maple command(s) you used to find it.

**Solution:** `f:=x->sqrt(x-4);` followed by `limit((f(x+h)-f(x))/h, h=0);` which gives \( \frac{1}{2\sqrt{x-4}} \).

6. State the Maple command you would use to find \( \lim_{x \to 1} \frac{\sqrt{8+x} - 3}{\sqrt{x} - 1} \). What is the limit?

**Solution:** `limit((sqrt(8+x)-3)/(sqrt(x)-1), x=1);` which gives \( \frac{1}{3} \).