Week 8 Math 1508 Worksheet

Problem 1 [sec 7.1]:
Solve the system algebraically:

\[
\begin{align*}
(x + 1)^2 + (y - 1)^2 &= 9 \\
12x - 6y &= 0
\end{align*}
\]

Problem 2 [sec 7.2]:
Solve the system by any method and check any solution(s) algebraically:

a. \[
\begin{align*}
5x + 3y &= 9 \\
5x + 2y &= -2
\end{align*}
\]

b. \[
\begin{align*}
\frac{2}{5}x + \frac{1}{15}y &= \frac{1}{5} \\
\frac{2}{9}x + \frac{4}{15}y &= -\frac{1}{3}
\end{align*}
\]

Problem 3 [sec 7.3]:
Solve the system of linear equations and check any solutions algebraically.

\[
\begin{align*}
3x + 5y + z - w &= -15 \\
5x + 7y - z + w &= 23 \\
10x + 11y - z + 2w &= 38 \\
-5x + y + 2z - w &= -31
\end{align*}
\]

Problem 4 [sec 7.4]:
Write the partial fraction decomposition of the rational expressions.

a. \[
\frac{3x+1}{2x^3-9+9x}
\]

b. \[
\frac{5}{(x^2+1)(x+3)}
\]