Week 8 Math 1508 Worksheet

Problem 1 [sec 7.1]:

Solve the system algebraically:

\[
\begin{align*}
(x-1)^2 + y^2 &= 4 \\
12x - 6y &= 0
\end{align*}
\]

Problem 2 [sec 7.2]:

Solve the system by any method and check any solution(s) algebraically:

a. \[
\begin{align*}
2x + 5y &= 6 \\
3x - 4y &= 7
\end{align*}
\]

b. \[
\begin{align*}
\frac{1}{5}x + \frac{2}{3}y &= 17 \\
\frac{2}{3}x + \frac{3}{5}y &= 8
\end{align*}
\]

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. \[
\frac{3x+1}{3x^3-13x^2+12x}
\]

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