1. (3 points) Rewrite the following expression with positive exponents and simplify:

\[
\left( \frac{3x^2y^3}{4x} \right)^{-2} = \\
\left( \frac{4x}{3x^2y^3} \right)^2 = \\
\frac{16x^2}{9x^4y^6} = \frac{16}{9x^2y^6}
\]

2. (3 points) Perform the multiplication and simplify:

\[
\frac{x^2 + 2x + 1}{x + 1} \cdot \frac{x - 2}{x^2 - 3x - 4} = \\
\frac{(x+1)^2}{x+1} \cdot \frac{x-2}{(x-4)(x+1)} = \\
\frac{(x+1)(x-2)}{x+1} = \\
\frac{x-2}{x-4} \quad (x \neq -1)
\]

3. (a) (1 point) Evaluate the following expression at \( x = -1 \):

\[
2x^2 + 5x - 12 = \\
2(-1)^2 + 5(-1) - 12 = \\
2(1) - 5 - 12 = -15
\]

(b) (2 points) Completely factor the following expression:

\[
2x^2 + 5x - 12 = \\
2x^2 + 8x - 3x - 12 = \\
2x(x+4) - 3(x+4) = \\
(2x-3)(x+4)
\]