

$$\begin{aligned}
6. \quad 4n^2 - 12n - 16 &= 4(n^2 - 3n - 4) \\
&= 4\left[n^2 - 3n + \frac{9}{4} - \frac{9}{4} - 4\right] \\
&= 4\left[\left(n - \frac{3}{2}\right)^2 - \frac{25}{4}\right] \\
&= 4\left[\left(n - \frac{3}{2} + \frac{5}{2}\right)\left(n - \frac{3}{2} - \frac{5}{2}\right)\right] \\
&= 4(n+1)(n-4)
\end{aligned}$$

$$\begin{aligned}
7. \quad 9x^2 + 36x + 20 &= 9\left[x^2 + 4x + \frac{20}{9}\right] \\
&= 9\left[(x+2)^2 - 4 + \frac{20}{9}\right] \\
&= 9\left[(x+2)^2 - \frac{16}{9}\right] \\
&= 9\left[x+2+\frac{4}{3}\right]\left[x+2-\frac{4}{3}\right] \\
&= 9\left[x+\frac{10}{3}\right]\left[x+\frac{2}{3}\right] \\
&= (3 \cdot 3)\left(x+\frac{10}{3}\right)\left(x+\frac{2}{3}\right) \\
&= \overbrace{3\left(x+\frac{10}{3}\right)} \cdot \overbrace{3\left(x+\frac{2}{3}\right)} = (3x+10)(3x+2)
\end{aligned}$$

$$\begin{aligned}
8. \quad 7x^2 + 28x + 21 &= 7[x^2 + 4x + 3] \\
&= 7[(x+2)^2 - 4 + 3] \\
&= 7[(x+2)^2 - 1] \\
&= 7[(x+2+1)(x+2-1)] \\
&= 7(x+3)(x+1)
\end{aligned}$$

$$\begin{aligned}
9. \quad x^2 - 2x - 899 &= (x-1)^2 - 1 - 899 \\
&= (x-1)^2 - 900 \\
&= (x-1+30)(x-1-30) \\
&= (x+29)(x-31)
\end{aligned}$$