Exercise #36 (p.406)

Factor: \( y^2 \cdot (y + 4) + 6 \cdot (y + 4) \)

The given expression in this instance is a bit trickier. For purposes of our discussion, it basically only has TWO terms, \( y^2 \cdot (y + 4) \) & \( 6 \cdot (y + 4) \). That's not obvious is it? Moreover, the other somewhat novel aspect in this is the visual challenge of recognizing the common factor that is present in both terms. Perhaps, you have already identified it? It is the (binomial) expression “\( y + 4 \)” and once it is extracted from the original expression that would leave only “\( y^2 + 6 \)” then to be written as the other/remaining factor. I.e.,

\[
y^2 \cdot (y + 4) + 6 \cdot (y + 4) = (y + 4) \cdot (y^2 + 6)
\]

via the distributive property

Answer: \((y + 4) \cdot (y^2 + 6)\)