

Factor each completely.

1. $c^2 + 11c - 42$

2. $6R^3 - 162R^2 + 432R$

3. $64g^3 + 336g^2 + 216g$

4. $w^2 - 441$

5. $75m^3 - 243m$

6. $\frac{100b^2}{9} - \frac{49p^2}{36}$

Factor each completely.

1. $c^2 + 11c - 42$

$$\begin{array}{r} -42 \\ +14 \quad -3 \\ 11 \end{array}$$

$= (c+14)(c-3)$

3. $64g^3 + 336g^2 + 216g$

$= 8g(8g^2 + 42g + 27)$

$= 8g(2g+9)(4g+3)$

$$\begin{array}{r} 216 \\ 36 \quad 6 \\ 42 \end{array}$$

$$\begin{array}{c} 2g+9 \\ 4g \quad \begin{array}{|c|c|} \hline 8g^2 & 36g \\ \hline 6g & 27 \\ \hline \end{array} \\ +3 \end{array}$$

5. $75m^3 - 243m$

$= 3m(25m^2 - 81)$

$= 3m(5m+9)(5m-9)$

2. $6R^3 - 162R^2 + 432R$

$= 6R(R^2 - 27R + 72)$

$= 6R(R-24)(R-3)$

$$\begin{array}{r} 72 \\ -24 \quad -3 \\ -27 \end{array}$$

4. $w^2 - 441$

$\sqrt{441} = 21$

$= (w+21)(w-21) \text{ or } (w \pm 21)$

6. $\frac{100b^2}{9} - \frac{49p^2}{36}$

$= \frac{10b}{3} \pm \frac{7p}{6}$