

Factor each completely.

1. $6a^3 + 12a^2 - 48a$

2. $25g^3 - 81$

3. $x^4 - 14x^2 - 32$

4. $2x^3 + 3x^2 + 8x + 12$

5. Simplify. $\sqrt[4]{405w^7}$

6. Expand. $(k + 6)^2$

Factor each completely.

1. $6a^3 + 12a^2 - 48a$

GCF: $6a$

$6a(a^2 + 2a - 8)$

$$\begin{array}{r} -8 \\ 4 \times -2 \\ +2 \end{array}$$

$6a(a+4)(a-2)$

2. $25g^2 - 81$

Difference of perfect squares

$5g \pm 9$

or

$(5g+9)(5g-9)$

3. $x^4 - 14x^2 - 32$

$$\begin{array}{r} -32 \\ -16 \times +2 \\ -14 \end{array}$$

$(x^2 - 16)(x^2 + 2)$

$(x \pm 4)(x^2 + 2)$

4. $2x^3 + 3x^2 + 8x + 12$

$2x \quad +3$

x^2	$2x^3$	$+3x^2$
$+4$	$+8x$	$+12$

$(2x+3)(x^2+4)$

5. Simplify. $\sqrt[4]{405w^7}$

$2^4 = 16$

$3^4 = 81$

~~$4^4 = 256$~~

$\sqrt[4]{81 \cdot 5 \cdot w^4 \cdot w^3}$

$3w \sqrt[4]{5w^3}$

6. Expand. $(k+6)^2$

	k	$+6$
k	k^2	$6k$
$+6$	$6k$	36

$k^2 + 12k + 36$