

Factor each completely.

1. $p^2 - 14p + 49$

2. $3Q^3 + 3Q^2 - 126Q$

3. $g^2 - 361$

4. $c^4 - 5c^2 - 36$

5. $96k^4 - 150$

6. $64w^2 + 48w + 9$

7. $6a^2 - 17ab + 12b^2$

8. $24d^3 - 40d^2$

Answers

Factor each completely.

1. $p^2 - 14p + 49$

$(p-7)^2$

2. $3Q^3 + 3Q^2 - 126Q$

$3Q(Q^2 + Q - 42)$

$= 3Q(Q+7)(Q-6)$

3. $g^2 - 361$

$\sqrt{361} = 19$

$(g \pm 19)$

4. $c^4 - 5c^2 - 36$

$(c^2 - 9)(c^2 + 4)$

$(c \pm 3)(c^2 + 4)$

5. $96k^4 - 150$

$6(16k^4 - 25)$

$6(4k^2 \pm 5)$

6. $64w^2 + 48w + 9$

$(8w + 3)^2$

$\sqrt{64} = 8$
 $\sqrt{9} = 3$
 $8 \cdot 3 = 24$
 $24 \cdot 2 = 48$

7. $6a^2 - 17ab + 12b^2$

$(2a-3b)(3a-4b)$

8. $24d^3 - 40d^2$

$8d^2(3d - 5)$

$\begin{array}{r|rr} 72 & 3a & 6a^2 & -9ab \\ -9 & -4b & -8ab & 12b^2 \\ \hline & & & \end{array}$