

*Check your work by multiplying!

Practice:

Factor each binomial completely.

1. $w^3 + 125$

$(w+5)(w^2-5w+25)$

Middle multiply opp sign

2. $54x^3 - 2$

$2(27x^3 - 1)$
 $2(3x-1)(9x^2+3x+1)$

3. $p^6 - 8r^3$

$(p^2-2r)(p^4+2rp^2+4r^2)$

$(b^8)^3 = b^{24}$

$(b^8+8)(b^{16}-8b^8+64)$

4. $b^{24} + 512$

5. $500s^3 + 32$

$4(125s^3+8)$
 $4(5s+2)(25s^2-10s+4)$

$(h^4)^3 = h^{12}$
 $3h^{12} - 192$

$3(h^{12}-64)$

$3(h^4-4)$
 (h^3+4h^4+16)

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7. $8m^3 + 27n^6$

8. $x^9 - y^9$

9. $3x^4 + 3x - 2x^3 - 2$

10. $2x^4 + 5x^3 - 16x - 40$

$x^3(2x+5) - 8(2x+5)$

Common factors

$(2x+5)(x^3-8)$

$(2x+5)(x-2)(x^2+2x+4)$

$2x+5=0$
 $x = -5/2$

$x-2=0$
 $x=2$

Quadratic Formula
 $x = \frac{-2 \pm \sqrt{4-16}}{2}$

$x = \frac{-2 \pm \sqrt{-12}}{2}$

$x = \frac{-2 \pm i\sqrt{12}}{2} = \frac{-2 \pm 2i\sqrt{3}}{2}$
 $= -1 \pm i\sqrt{3}$

Now find all roots... Set each factor = 0; solve