- HW & log out
- Do Now: Factor the Expression Below

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

4 terms → group

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

common: leftover

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

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

$x = -5/2$ $\quad x = 2$

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

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

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

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

*Check your work by multiplying!

Practice:

Factor each binomial completely.

1. $w^3 + 125$

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

2. $54x^3 - 2$

$2(27x^3-1)$

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

$(p^2)^3 = p^6$

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

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

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

4. $b^{24} + 512$

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

5. $500s^3 + 32$

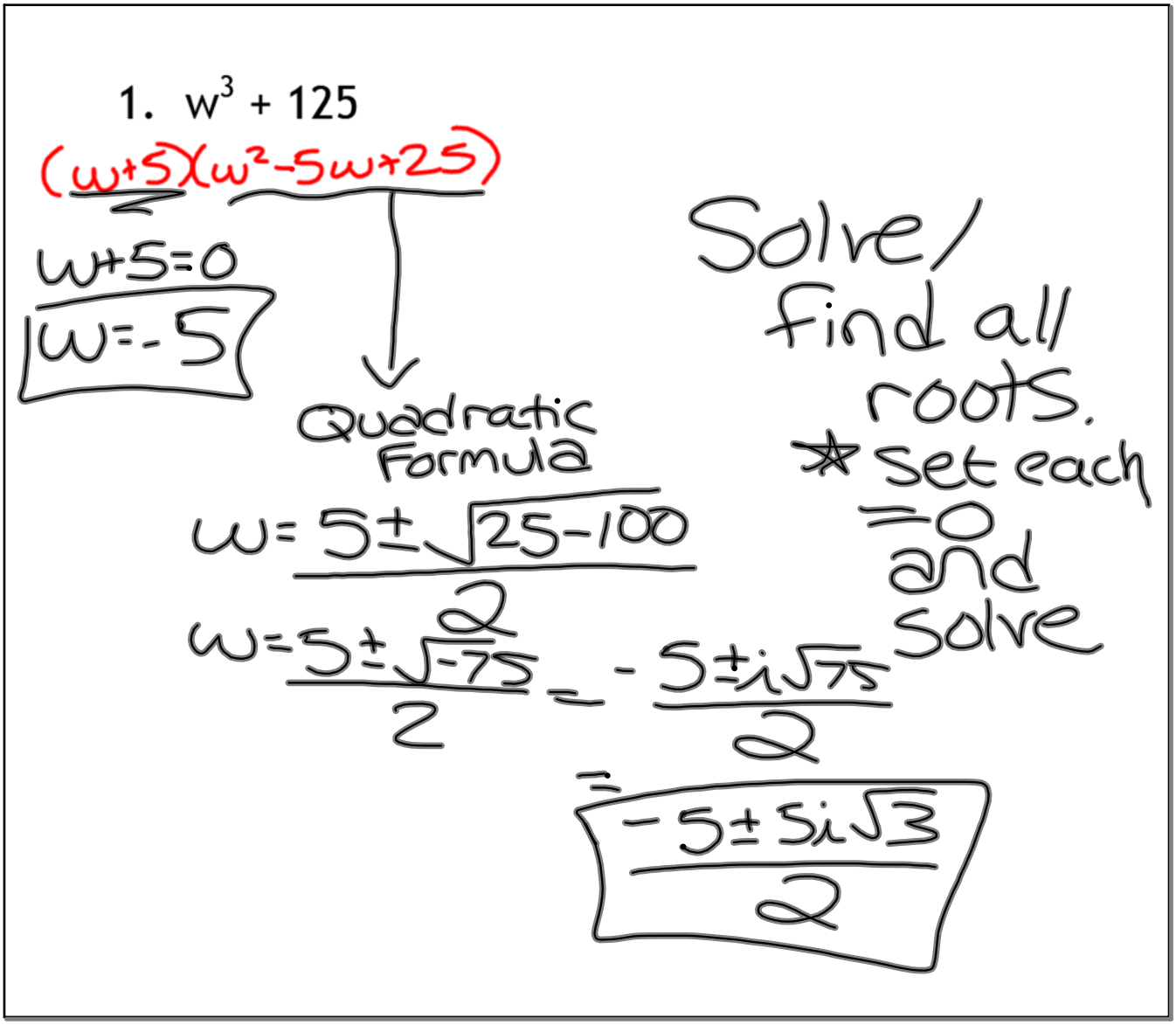
$4(125s^3+8)$

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

6. $3h^{12} - 192$

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

$3(h^4-4)(h^8+4h^4+16)$


1. $w^3 + 125$
$(w+5)(w^2-5w+25)$
$w+5=0$
$w=-5$
Quadratic Formula
$w=\frac{5\pm\sqrt{25-100}}{2}$
$w=\frac{5\pm\sqrt{-75}}{2}=-\frac{5\pm i\sqrt{75}}{2}$
$=\frac{-5\pm 5i\sqrt{3}}{2}$
Solve/ find all roots.
* set each =0 and solve

Practice: Solve each equation.

1. $56x^4 - 40x^3 = 5 - 7x$

$56x^4-40x^3+7x-5=0$

Grap $8x^3(7x-5)+1(7x-5)$

$(8x^3+1)(7x-5)$

cubes $(2x+1)(4x^2-2x+1)(7x-5)$

set=0

$x=-1/2$

$5/7$

$\frac{1\pm i\sqrt{3}}{4}$

2. $32x^3 + 4 = 0$