1-6 HW Answer Key

1. See next page
2. See next page
3. $(x+3)(x^2-3x+9)$
4. $(x-3)(x^2+3x+9)$
5. $(2+x)(4-2x+x^2)$
6. $(2-x)(4+2x+x^2)$
7. $(2x-1)(4x^2+2x+1)$
8. $(x-9)(x+5)$
9. $(5x-2)(3x+1)$
10. $(x^2+1)(5x+2)$
11. $4x^2(x+1)(x-2)$
12. $3a(3a+b)(3a-b)$

Open House Wed, 9/18 6-8pm
Thurs, 9/19 - Quiz 2

Sep 17-7:18 AM

1. Justify that $a^3+b^3=(a+b)(a^2-ab+b^2)$ by simplifying the right side.

$a^3+b^3=a(a^2-ab+b^2)+b(a^2-ab+b^2)$
$a^3+b^3=a^3-a^2b+ab^2+a^2b-ab^2+b^3$
$a^3+b^3=a^3+b^3$ ✓

2. Prove that $a^3-b^3=(a-b)(a^2+ab+b^2)$ by simplifying the right side.

$a^3-b^3=a(a^2+ab+b^2)-b(a^2+ab+b^2)$
$a^3-b^3=a^3+a^2b+ab^2-a^2b-ab^2-b^3$
$a^3-b^3=a^3-b^3$

Factor all. Check #s 3 and 6 only.

3. $x^3+27=(x+3)(x^2-3x+9)$
$a=x$, $b=3$

check: $(x+3)(x^2-3x+9)$
$=x^3-3x^2+9x+3x^2-9x+27$
$=x^3+27$ ✓

4. $x^3-27=(x-3)(x^2+3x+9)$
$a=x$, $b=3$

check: $(x-3)(x^2+3x+9)$
$=x^3+3x^2+9x-3x^2-9x-27$
$=x^3-27$ ✓

5. $8+x^3=(2+x)(2^2-2x+x^2)$
$a=2$, $b=x$
$=(2+x)(4-2x+x^2)$

check: $(2+x)(4-2x+x^2)$
$=8-4x+2x^2+4x-2x^2+x^3$
$=8+x^3$ ✓

6. $8-x^3=(2-x)(2^2+2x+x^2)$
$a=2$, $b=x$
$=(2-x)(4+2x+x^2)$

check: $(2-x)(4+2x+x^2)$
$=8+4x+2x^2-4x-2x^2-x^3$
$=8-x^3$

Sep 1-4:23 PM

Factor completely.

7. $8x^3 - 1 = (2x-1)((2x)^2+2x+1)$
$a=2x$ $=(2x-1)(4x^2+2x+1)$
$b=1$

8. $x^2 - 4x - 45$ $P=-45, S=-4$
$=(x-9)(x+5)$ $-9, 5$

9. $15x^2 - x - 2$ $P=-30, S=-1$ $5, -6$
$=15x^2-6x+5x-2$
$=3x(5x-2)+1(5x-2)$
$=(5x-2)(3x+1)$

10. $5x^3 + 5x + 2x^2 + 2$
$=5x(x^2+1)+2(x^2+1)$
$=(x^2+1)(5x+2)$

11. $4x^4 - 4x^3 - 8x^2$
$=4x^2(x^2-x-2)$ $P=-2$ $S=-1$
$=4x^2(x+1)(x-2)$ $1, -2$

12. $27a^3 - 3ab^2$
$=3a(9a^2-b^2)$
$=3a(3a+b)(3a-b)$

Sep 1-4:24 PM

1-7: Factoring Activity – Take out a piece of scrap paper.

Create a factoring problem for the class to solve. **Start with the answer!**

Type	Question	Answer
GCF	$2x+6$	$2(x+3)$
DOTS (binomial)	x^2-1	$(x+1)(x-1)$ $x^2-x+x-1$
Short Prod-Sum (trinomial, a=1)	x^2-x-2	$(x+1)(x-2)$ $x^2-2x+1x-2$
Long Prod-Sum (trinomial, a≠1)	$2x^2-x-1$	$(2x+1)(x-1)$ $2x^2-2x+x-1$
Grouping (4 terms, degree=3) x^3	$2x^3+6x^2+x+3$	$(2x^2+1)(x+3)$ $2x^3+6x^2+x+3$
Sum or Difference Of Cubes (a^3-b^3, a^3+b^3)	x^3-8	$a=x$ $b=2$ $x^3-2^3=(x-2)(x^2+2x+4)$ keep change plus

Sep 10-5:30 PM

1 - GCF	$8x+64$	$8(x+8)$
2 - DOTS	x^2-16	$(x-4)(x+4)$
3 – Short P-S	$x^2+2x-15$	$(x+5)(x-3)$
4 – Long P-S	$2x^2-4x-6$	$(2x+2)(x-3)$
5 - Grouping		
6 – Sum or Diff of Cubes		
7 - GCF		
8 - DOTS		

Aug 14-9:45 PM

Sep 12-9:29 PM