1.2 Advanced Factoring

PRACTICE

DIRECTIONS: Factor completely.

1) $x^4 + x^2 - 12$ No need for box as leading coefficient is 1.

$(x^2+4)(x^2-3)$ $\times -12$ $+1$

2) $16x^4 - 81$

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

$(2x-3)(2x+3)(4x^2+9)$

I used difference of squares twice.

3) $x^4 - 9x^2 + 20$ No need for box as leading coefficient is 1.

$(x^2-5)(x^2-4)$ $\times 20$ $+ -9$

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

Difference of Squares

4) $3x^4 - x^2 - 2$ $\times -6$ $+ -1$

	x^2	-1
$3x^2$	$3x^4$	$-3x^2$
2	$2x^2$	-2

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

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

Difference of Squares

5) $28y^3 + 24y^2 - 35y - 30$

	$7y$	6
$4y^2$	$28y^3$	$24y^2$
-5	$-35y$	-30

$(7y+6)(4y^2-5)$

4 given terms so i went STRAIGHT to the box.

6) $h^4 + 9h^2 + 8$ $\times 8$ $+9$

$(h^2+8)(x^2+1)$

No need for box as leading coefficient is 1.

7) $10n^3 - 5n^2 - 14n + 7$

	$2n$	1
$5n^2$	$10n^3$	$-5n^2$
-7	$-14n$	7

$(2n+1)(5n^2-7)$

4 given terms so i went STRAIGHT to the box.

8) $m^4 - 1$

Difference of Squares $\times 2$

$(m^2-1)(m^2+1)$

$(m-1)(m+1)(m^2+1)$

9) $28u^3 + 8u^2 - 7u - 2$

4 given terms so i went STRAIGHT to the box.

	$7u$	2
$4u^2$	$28u^3$	$8u^2$
-1	$-7u$	-2

Difference of Squares

$(7u+2)(4u^2-1)$

$(7u+2)(2u-1)(2u+1)$

10) $(2n^3 - 10n^2 - 5n + 25)(n^2 + 8n + 15)$

$(n+5)(n+3)$

	n	-5
$2n^2$	$2n^3$	$-10n^2$
-5	$-5n$	25

$(2n^2 - 5)(n - 5)$

$(2n^2-5)(n-5)(n+5)(n+3)$

11) $(b^4 - 6b^2 + 8)(5b^4 - 11b^2 - 12)$

$(b^2-4)(b^2+2)$

$(b+2)(b-2)(b^2+2)$

$\times -60$

$+ -11$

	$5b^2$	4
b^2	$5b^4$	$4b^2$
-3	$-15b^2$	-12

$(b^2-3)(5b^2+4)$

$(b+2)(b-2)(b^2+2)(b^2-3)(5b^2+4)$

12) $(4x^2 - 8x - 5)(4x^2 - 16x + 15)$

$\times -20$ $+ -8$

	$2x$	-5
$2x$	$4x^2$	$-10x$
1	$2x$	-5

$(2x+1)(2x-5)$

$\times 60$ $+ -16$

	$2x$	-5
$2x$	$4x^2$	$-10x$
-3	$-6x$	15

$(2x-3)(2x-5)$

$(2x+1)(2x-5)(2x-3)(2x-5)$

13) $(n^2 - 7n + 12)(12n^3 - 3n^2 + 4n - 1)$

$(n-4)(n-3)$

	$4n$	-1
$3n^2$	$12n^3$	$-3n^2$
1	$4n$	-1

$(3n^2-1)(4n-1)$

$(n-4)(n-3)(4n-1)(3n^2-1)$