

Factoring by Grouping

Date _____ Period _____

Factor each completely.

1) $15a^3 + 20a^2 + 12a + 16$
 $(5a^2 + 4)(3a + 4)$

2) $3v^3 + 2v^2 + 9v + 6$
 $(v^2 + 3)(3v + 2)$

3) $6b^3 - 2b^2 + 3b - 1$
 $(2b^2 + 1)(3b - 1)$

4) $2n^3 + 10n^2 + 3n + 15$
 $(2n^2 + 3)(n + 5)$

5) $25p^3 + 10p^2 + 5p + 2$
 $(5p^2 + 1)(5p + 2)$

6) $75n^3 - 45n^2 + 15n - 9$
 $3(5n^2 + 1)(5n - 3)$

7) $36r^3 - 24r^2 + 48r - 32$
 $4(3r^2 + 4)(3r - 2)$

8) $5x^3 - 5x^2 + 3x - 3$
 $(5x^2 + 3)(x - 1)$

9) $5n^3 + 10n^2 + 2n + 4$
 $(5n^2 + 2)(n + 2)$

10) $25b^3 + 15b^2 + 5b + 3$
 $(5b^2 + 1)(5b + 3)$

11) $6uv + 24u - 5v - 20$
 $(6u - 5)(v + 4)$

12) $48xy - 72x + 42y - 63$
 $3(8x + 7)(2y - 3)$

13) $192xy - 240x + 120y^3 - 150y^2$
 $6(8x + 5y^2)(4y - 5)$

14) $7xy + 3x - 28y - 12$
 $(x - 4)(7y + 3)$

15) $120ab + 80a - 192b - 128$
 $8(5a - 8)(3b + 2)$

16) $16xy - 40xp + 10py - 25p^2$
 $(8x + 5p)(2y - 5p)$

17) $21xy + 28x^3 - 105ny - 140nx^2$
 $7(x - 5n)(3y + 4x^2)$

18) $175ab + 35ap - 75pb - 15p^2$
 $5(7a - 3p)(5b + p)$

19) $8xy + 4xn - 48ny - 24n^2$
 $4(x - 6n)(2y + n)$

20) $60xy - 48x^2 + 140by - 112bx$
 $4(3x + 7b)(5y - 4x)$

21) $21x^2y - 112xn - 28x^2 + 84xny$
 $7x(x + 4n)(3y - 4)$

22) $24az - 30yc + 120ac - 6yz$
 $6(4a - y)(z + 5c)$

23) $240m^2n + 280m + 200m^2 + 336mn$
 $8m(5m + 7)(6n + 5)$

24) $8uv - 28a^2 + 7ua - 32av$
 $(u - 4a)(8v + 7a)$

25) $105h^3az^2 - 40h^4y - 70h^4a + 60h^3yz^2$
 $5h^3(7a + 4y)(3z^2 - 2h)$