

Factoring by Grouping

Factor each completely.

1) $5mn + 25m + 3n^3 + 15n^2$

2) $4au + 24av - 5bu - 30bv$

3) $15xw + 18xk + 25yw + 30yk$

4) $7xy + 28x^3 + y + 4x^2$

5) $6b^3 + 16b^2 - 15b - 40$

6) $12r^3 + 20r^2 + 15r + 25$

7) $4b^3 + b^2 + 8b + 2$

8) $28k^3 - 4k^2 - 35k + 5$

9) $7xy - 3n - x + 21ny$

10) $42ab - 25b - 35a + 30b^2$

11) $21uv + 8b + 3u + 56bv$

12) $28xy - 7k - 49x + 4ky$

13) $126r^5 - 144r^4 - 210r^3 + 240r^2$

14) $28x^4 + 112x^3 - 21x^2 - 84x$

15) $70n^4 + 40n^3 + 28n^2 + 16n$

16) $56n^3 + 64n^2 + 70n + 80$

17) $125m^2n - 30mp - 50m^2 + 75mpn$

18) $15xy - 12vx - 12x^2 + 15vy$

19) $45uv - 125bu - 75u^2 + 75bv$

20) $32u^2v - 12u^3m + 48u^4 - 8umv$

Answers to Factoring by Grouping

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|------------------------------|-----------------------------|----------------------------|-------------------------|
| 1) $(5m + 3n^2)(n + 5)$ | 2) $(4a - 5b)(u + 6v)$ | 3) $(3x + 5y)(5w + 6k)$ | 4) $(7x + 1)(y + 4x^2)$ |
| 5) $(2b^2 - 5)(3b + 8)$ | 6) $(4r^2 + 5)(3r + 5)$ | 7) $(b^2 + 2)(4b + 1)$ | 8) $(4k^2 - 5)(7k - 1)$ |
| 9) $(x + 3n)(7y - 1)$ | 10) $(7a + 5b)(6b - 5)$ | 11) $(3u + 8b)(7v + 1)$ | 12) $(7x + k)(4y - 7)$ |
| 13) $6r^2(3r^2 - 5)(7r - 8)$ | 14) $7x(4x^2 - 3)(x + 4)$ | 15) $2n(5n^2 + 2)(7n + 4)$ | |
| 16) $2(4n^2 + 5)(7n + 8)$ | 17) $5m(5m + 3p)(5n - 2)$ | 18) $3(x + v)(5y - 4x)$ | |
| 19) $5(3u + 5b)(3v - 5u)$ | 20) $4u(4u - m)(2v + 3u^2)$ | | |