Name _____

3.9 Factoring $ax^2 + bx + c$, $a \neq 1$

MATHPOWER™ 10, Western Edition, pp. 128–131

Factor, if possible.

1. $2x^2 + 7x + 3$ — $(x+3)(2x+1)$

2. $3y^2 + 5y + 1$ — cannot factor

3. $2x^2 - 11x + 15$ — $2x^2 - 5x - 6x + 15$; $x(2x-5) - 3(2x-5)$; $(x-3)(2x-5)$

4. $4n^2 + 7n - 5$ — cannot factor

5. $3y^2 + y - 4$ — $(3y+4)(y-1)$

6. $2a^2 - 13a + 21$ — $(a-3)(2a-7)$

7. $20x^2 - 7x - 6$ — $(4x+1)(5x-3)$

8. $18y^2 + 15y - 18$ — $3(6y^2 + 5y - 6)$; $3(2y+3)(3y-2)$

9. $5x^2 - 12x - 6$ — Nil

10. $8m^2 + 6m - 20$ — $2(4m^2 + 3m - 10)$; $2(4m^2 + 8m - 5m - 10)$; $2(4m(m+2) - 5(m+2))$; $2(4m-5)(m+2)$

Factor.

11. $2x^2 + 5xy + 2y^2$ — $(x+2y)(2x+y)$

12. $3y^2 + 2yz - z^2$ — $(3y-z)(y+z)$

13. $4t^2 - 7ts - 2s^2$ — $(t-2s)(4t+s)$

14. $15x^2 - 13xy + 2y^2$ — $(3x-2y)(5x-y)$

15. $6m^2 + 7mn + n^2$ — $(m+n)(6m+n)$

16. $4a^2 - 3ab - 9b^2$ — Nil

17. $6x^2 - 2xy - 8y^2$ — $2(3x^2 - xy - 4y^2)$; $2(3x-4y)(x+y)$

18. $18a^2 - 21ab + 6b^2$ — $3(6a^2 - 7ab + 2b^2)$; $3(2a-1b)(3a-2b)$

19. $6m^2 - 13mn - 5n^2$ — $(2m-5n)(3m+1n)$

20. $9x^2 + 3xy - 20y^2$ — $(3x+5y)(3x-4y)$

21. $12a^2 + 28ab - 24b^2$ — $4(3a-2b)(a+3b)$

22. $4x^2 - xy - 18y^2$ — $4x^2 - 9xy + 8xy - 18y^2$; $x(4x-9y) + 2y(4x-9y)$; $(x+2y)(4x-9y)$

23. The area of a rectangular lot in a new housing development can be represented approximately by the trinomial $12x^2 + 8x - 15$.

a) Factor the expression $12x^2 + 8x - 15$ to find binomials that represent the length and width of the lot.

$(6x-5)(2x+3)$

b) If x represents 21 m, what are the length and width of the lot, in metres?

$(6 \cdot 21) - 5$ $\quad 2(21) + 3$

$l = 121$ m $\quad w = 45$ m

Copyright © 1999 McGraw-Hill Ryerson Limited