

EXTRA PRACTICE 19
Special Products of Polynomials
Use after Section 4.6

Name _____

See Section 4.6 for a complete explanation of the FOIL method of multiplying two polynomials.

$$\begin{array}{r} \text{F} \quad \text{O} \quad \text{I} \quad \text{L} \\ \text{Examples:} \quad (x+9)(x+3) = x \cdot x + 3 \cdot x + 9 \cdot x + 9 \cdot 3 \\ \quad \quad \quad = x^2 + 3x + 9x + 27 \\ \quad \quad \quad = x^2 + 12x + 27 \end{array}$$

$$\begin{array}{r} \text{F} \quad \text{O} \quad \text{I} \quad \text{L} \\ (5t^3 + 3)(2t^2 - 1) = 10t^5 - 5t^3 + 6t^2 - 3 \end{array}$$

$$(A+B)(A-B) = A^2 - B^2$$

$$(x+7)(x-7) = x^2 - 49$$

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

$$(A+B)^2 = A^2 + 2AB + B^2$$

$$(x+4)^2 = x^2 + 2 \cdot x \cdot 4 + 4^2$$

$$= x^2 + 8x + 16$$

$$(4x+1)^2 = (4x)^2 + 2 \cdot 4x \cdot 1 + 1^2$$

$$= 16x^2 + 8x + 1$$

$$(A-B)^2 = A^2 - 2AB + B^2$$

$$(x-5)^2 = x^2 - 2 \cdot x \cdot 5 + 5^2$$

$$= x^2 - 10x + 25$$

$$(2x-5x^2)^2 = (2x)^2 - 2 \cdot 2x \cdot 5x^2 + (5x^2)^2$$

$$= 4x^2 - 20x^3 + 25x^4$$

Multiply.

1. $(x+3)(x-9)$ _____

2. $(x+6)(x-6)$ _____

3. $(x+8)^2$ _____

4. $\left(5x - \frac{1}{3}\right)^2$ _____

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

6. $(3x-1)^2$ _____

EXTRA PRACTICE 19 (continued)
Special Products of Polynomials
Use after Section 4.6

7. $(5+x)^2$ _____

8. $(1+4x)(1-2x)$ _____

9. $(-2x-5)(x+1)$ _____

10. $\left(\frac{2}{3}x+12\right)\left(\frac{2}{3}x-1.2\right)$ _____

11. $\left(4a-\frac{1}{2}\right)^2$ _____

12. $(8x^2+3)(8x^2-3)$ _____

13. $(x-14)(x+1)$ _____

14. $(4x^2-7)(x^2+4)$ _____

15. $(x^3+1)^2$ _____

16. $(5-2x^3)^2$ _____

17. $(5x+9)(2x-3)$ _____

18. $(t^2+0.5)(t^2-0.5)$ _____

19. $(4x+5)(3x^2-5)$ _____

20. $(9-2x^4)^2$ _____

21. $\left(m+\frac{3}{4}\right)\left(m-\frac{3}{4}\right)$ _____

22. $(x^5-1)(x^2+2)$ _____

23. $(-5q+2)(5q+2)$ _____

24. $\left(\frac{1}{3}x^2+4\right)(x^2-1)$ _____

25. $(3x^2-5)(x^4-1)$ _____

26. $(x^5+3)(x^5-3)$ _____

27. $(7x-x^2)^2$ _____

28. $(0.2y+1.7)^2$ _____

29. $(t-3)(t^2+3t+9)$ _____

30. $\left(x-\frac{1}{2}\right)\left(x+\frac{2}{3}\right)$ _____