

**EXTRA PRACTICE 21**  
**Factoring Polynomials**  
**Use after Sections 5.1 - 5.5**

Name \_\_\_\_\_

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Examples. Factor completely.

a)  $4x^3 + 12x^2 - 8x = 4x(x^2 + 3x - 2)$

b)  $5x^3 - 3x^2 + 20x - 12 = x^2(5x - 3) + 4(5x - 3) = (5x - 3)(x^2 + 4)$

c)  $x^2 + 2x - 35 = (x + 7)(x - 5)$

d)  $3x^2 - 5x - 2 = (3x + 1)(x - 2)$

e)  $x^2 - 18x + 81 = (x - 9)^2$

f)  $4x^2 - 25y^2 = (2x + 5y)(2x - 5y)$

Factor.

1.  $x^2 - 6x - 16 =$  \_\_\_\_\_

2.  $4y^2 + 7y - 2 =$  \_\_\_\_\_

3.  $5a^3 - 25a^2 + 15a =$  \_\_\_\_\_

4.  $9x^2 - 16 =$  \_\_\_\_\_

5.  $x^2 - 64 =$  \_\_\_\_\_

6.  $a^2 + 12a + 27 =$  \_\_\_\_\_

7.  $6x^2 + 12x + 6 =$  \_\_\_\_\_

8.  $x^3 + 2x^2 - 5x - 10 =$  \_\_\_\_\_

9.  $x^2 - 10x + 21 =$  \_\_\_\_\_

10.  $12x^5 - 6x^3 + 3x^2 =$  \_\_\_\_\_

11.  $6y^2 - 54 =$  \_\_\_\_\_

12.  $4y^2 - 17y - 15 =$  \_\_\_\_\_

13.  $6x^2 - 7x + 2 =$  \_\_\_\_\_

14.  $5x^2 - 5 =$  \_\_\_\_\_

15.  $y^5 + 3y^3 + 4y^2 + 12 =$  \_\_\_\_\_

16.  $x^2 - 7x - 18 =$  \_\_\_\_\_

**EXTRA PRACTICE 21 (continued)**  
**Factoring Polynomials**  
**Use after Sections 5.1 - 5.5**

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17.  $x^2 - 8x + 16 =$  \_\_\_\_\_

18.  $a^2 - 9a + 14 =$  \_\_\_\_\_

19.  $49x^2 - 1 =$  \_\_\_\_\_

20.  $8x^4 - 4x^3 + 12x^2 =$  \_\_\_\_\_

21.  $y^2 + 10y + 25 =$  \_\_\_\_\_

22.  $3a^2 + 12a - 3 =$  \_\_\_\_\_

23.  $x^4 - 81 =$  \_\_\_\_\_

24.  $9y^2 - 12y + 4 =$  \_\_\_\_\_

25.  $a^2 + 11a + 30 =$  \_\_\_\_\_

26.  $8t^2 + 2t - 3 =$  \_\_\_\_\_

27.  $75x^2 - 30x + 3 =$  \_\_\_\_\_

28.  $3t^2 - 8t - 3 =$  \_\_\_\_\_

29.  $x^2 + 3x + 8x + 24 =$  \_\_\_\_\_

30.  $y^2 - 22y + 121 =$  \_\_\_\_\_

31.  $x^2 - 2x - 3 =$  \_\_\_\_\_

32.  $4x^2 - 24x + 36 =$  \_\_\_\_\_

33.  $y^2 - 6y + 5 =$  \_\_\_\_\_

34.  $25t^2 - 4 =$  \_\_\_\_\_

35.  $14x^3 - 7x^2 + 21x =$  \_\_\_\_\_

36.  $9x^2 + 42x + 49 =$  \_\_\_\_\_

37.  $9x^2 - 81 =$  \_\_\_\_\_

38.  $12x^2 + 4x - 5 =$  \_\_\_\_\_

39.  $49a^2 - 28a + 4 =$  \_\_\_\_\_

40.  $8x^2 - 29x - 12 =$  \_\_\_\_\_