EXERCISES

Writing About Mathematics

1. Can the equation $x^2 = 9$ be solved by factoring? Explain your answer.
2. In Example 4, the trinomial was written as the product of three factors. Only two of these factors were set equal to 0. Explain why the third factor was not used to find a solution of the equation.

Developing Skills

In 3–38, solve each equation and check.

3. $x^2 - 3x + 2 = 0$
4. $z^2 - 5z + 4 = 0$
5. $x^2 - 8x + 16 = 0$
6. $r^2 - 12r + 35 = 0$
7. $c^2 + 6c + 5 = 0$
8. $m^2 + 10m + 9 = 0$
9. $x^2 + 2x + 1 = 0$
10. $y^2 + 11y + 24 = 0$
11. $x^2 - 4x - 5 = 0$
12. $x^2 + x - 6 = 0$
13. $x^2 + 2x - 15 = 0$
14. $r^2 - r - 72 = 0$
15. $x^2 - x - 12 = 0$
16. $x^2 - 49 = 0$
17. $z^2 - 4 = 0$
18. $m^2 - 64 = 0$
19. $3x^2 - 12 = 0$
20. $d^2 - 2d = 0$
21. $s^2 - s = 0$
22. $x^2 + 3x = 0$
23. $z^2 + 8z = 0$
24. $x^2 - x = 6$
25. $y^2 - 3y = 28$
26. $c^2 - 8c = -15$
27. $r^2 = 4$
28. $x^2 = 121$
29. $y^2 = 6y$
30. $s^2 = -4s$
31. $y^2 = 8y + 20$
32. $x^2 = 9x - 20$
33. $30 + x = x^2$
34. $x^2 + 3x - 4 = 50$
35. $2x^2 + 7 = 5 - 5x$
36. $x(x - 2) = 35$
37. $y(y - 3) = 4$
38. $x(x + 3) = 40$

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12) $x^2+x-6=0$

$(x+3)(x-2)=0$

$x+3=0$	$x-2=0$
$x=-3$	$x=2$

$\{-3,2\}$

13) $x^2+2x-15=0$

$(x+5)(x-3)=0$

$x+5=0$	$x-3=0$
$x=-5$	$x=3$

$\{-5,3\}$

20) $d^2-2d=0$

$d(d-2)=0$

$d=0$	$d-2=0$
	$d=2$

$\{0,2\}$

28) $\sqrt{x^2}=\pm\sqrt{121}$

$x=\pm 11$

$\{-11,11\}$

or $x^2=121$

$x^2-121=0$

$(x-11)(x+11)=0$

$x-11=0$	$x+11=0$
$x=11$	$x=-11$

29) $y^2=6y$

$y^2-6y=0$

$y(y-6)=0$

$y=0$	$y-6=0$
	$y=6$

$\{0,6\}$

31) $y^2=8y+20$

$y^2-8y-20=0$

$(y-10)(y+2)=0$

$y-10=0$	$y+2=0$
$y=10$	$y=-2$

33) $30+x=x^2$

$x^2-x-30=0$

$(x-6)(x+5)=0$

$x-6=0$	$x+5=0$
$x=6$	$x=-5$

$\{-5,6\}$

34) $x^2+3x-4=50$

$x^2+3x-54=0$

$(x+9)(x-6)=0$

$x+9=0$	$x-6=0$
$x=-9$	$x=6$

$\{-9,6\}$

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

$m=4$

$2x^2+5x+2=0$

$2x^2+4x+x+2=0$

$2x(x+2)\,|\,+1(x+2)$

$(2x+1)(x+2)=0$

$2x+1=0$	$x+2=0$
$2x=-1$	$x=-2$
$x=-\frac{1}{2}$	

$\{-\frac{1}{2},-2\}$

36) $x(x-2)=35$

$x^2-2x=35$

$x^2-2x-35=0$

$(x-7)(x+5)=0$

$x-7=0$	$x+5=0$
$x=7$	$x=-5$

$\{-5,7\}$

37) $y(y-3)=4$

$y^2-3y=4$

$y^2-3y-4=0$

$(y-4)(y+1)=0$

$y-4=0$	$y+1=0$
$y=4$	$y=-1$

$\{-1,4\}$

38) $x(x+3)=40$

$x^2+3x=40$

$x^2+3x-40=0$

$(x+8)(x-5)=0$

$x+8=0$	$x-5=0$
$x=-8$	$x=5$

$\{-8,5\}$