

Name: _____

Hour: _____

Sec. 3.5A

(Solving by Factoring or Square Root Method)

Solve each quadratic equation and write your answer in exact form.

1. $x^2 - 5x - 14 = 0$

$$(x+2)(x-7) = 0$$

$$x = -2, 7$$

2. $5v^2 - 9v - 18 = 0$

$$5v^2 - 15v + 6v - 18 = 0$$

$$5v(v-3) + 6(v-3) = 0$$

$$(5v+6)(v-3) = 0$$

$$5v+6=0 \quad v-3=0$$

$$v = -\frac{6}{5}, v = 3$$

3. $x^2 + 6 = 38$

$$x^2 = 32$$

$$x = \pm 4\sqrt{2}$$

$$\sqrt{32} = \sqrt{16 \cdot 2} = 4\sqrt{2}$$

4. $k^2 - 7k = 0$

$$k(k-7) = 0$$

$$k = 0, k = 7$$

5. $\sqrt{(x-6)^2} = 9$

$$x-6 = \pm 3$$

$$x = 9, 3$$

6. $m^2 = -3m - 2$

$$m^2 + 3m + 2 = 0$$

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

$$m = -1, -2$$

7. $\sqrt{9x^2} = 4$ or $9x^2 = 4$

$$\frac{3x}{3} = \pm \frac{2}{3}$$

$$x = \pm \frac{2}{3}$$

$$\sqrt{x^2} = \sqrt{\frac{4}{9}}$$

$$x = \pm \frac{2}{3}$$

8. $8x^2 - 6 = 47x$

$$8x^2 - 47x - 6 = 0$$

$$(8x^2 - 48x) + (x - 6) = 0$$

$$8x(x-6) + 1(x-6) = 0$$

$$(8x+1)(x-6) = 0$$

$$x = -\frac{1}{8}, x = 6$$

9. $n^2 - n = 6$

$$n^2 - n - 6 = 0$$

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

$$n = -2, 3$$

10. $2(x+1)^2 = 16$

$$\sqrt{(x+1)^2} = \sqrt{8}$$

$$x+1 = \pm 2\sqrt{2}$$

$$x = -1 \pm 2\sqrt{2}$$

$$\sqrt{8} = 2\sqrt{2}$$

$$\sqrt{2 \cdot 2} = 2$$

11. $2n^2 = 4n$

$$2n^2 - 4n = 0$$

$$2n(n-2) = 0$$

$$n = 0, 2$$

12. $6b^2 = 294$

$$\sqrt{b^2} = \sqrt{49}$$

$$b = \pm 7$$

$$b = \pm 7$$

13. $x^2 - x = 42$

$$x^2 - x - 42 = 0$$

$$(x-7)(x+6) = 0$$

$$x = 7, -6$$

14. $9 + 10n = 2n^2 - 3$

$$2n^2 + 11n + 12 = 0$$

$$(2n^2 + 8n) + (3n + 12) = 0$$

$$2n(n+4) + 3(n+4) = 0$$

$$(n+4)(2n+3) = 0$$

$$n = 4, -\frac{3}{2}$$

15. $n^2 + 3 = 67$

$$n^2 = 64$$

$$n = \pm 8$$

16. $40n^2 - 32 = 8n$

$$40n^2 - 8n - 32 = 0$$

$$(40n^2 - 40n) + (32n - 32) = 0$$

$$40n(n-1) + 32(n-1) = 0$$

$$(40n+32)(n-1) = 0$$

$$n = -\frac{32}{40}, n = 1$$

$$\frac{40}{5} = 8$$

17. $x^2 - 28 = 3x$

$$x^2 - 3x - 28 = 0$$

$$(x-7)(x+4) = 0$$

$$x = 7, -4$$

18. $16x^2 = 49$

$$\sqrt{16x^2} = \sqrt{\frac{49}{16}}$$

$$x = \pm \frac{7}{4}$$

19. $v^2 - 7v = -12$

$$v^2 - 7v + 12 = 0$$

$$(v-3)(v-4) = 0$$

$$v = 3, 4$$

20. $r^2 = 36r$

$$r^2 - 36r = 0$$

$$r(r-36) = 0$$

$$r = 0, 36$$

21. $3m^2 - 9m - 19 = 5 - 8m$

$$3m^2 - 1m - 24 = 0$$

$$(3m^2 - 9m) + (8m - 24) = 0$$

$$3m(m-3) + 8(m-3) = 0$$

$$(3m+8)(m-3) = 0$$

$$m = -\frac{8}{3}, 3$$

22. $x^2 = -11x - 30$

$$x^2 + 11x + 30 = 0$$

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

$$x = -6, -5$$

23. $\frac{9x^2}{9} = \frac{1}{9}$

$$\sqrt{x^2} = \sqrt{\frac{1}{9}}$$

$$x = \pm \frac{1}{3}$$

24. $\frac{-3(x+4)^2}{-3} = \frac{-15}{-3}$

$$\sqrt{(x+4)^2} = \sqrt{5}$$

$$x+4 = \pm\sqrt{5}$$

$$x = -4 \pm \sqrt{5}$$