Algebra 1
22.1-22.2
Solving Quadratic Equations

Name: _____

Solve the following quadratic equations by taking the square root.

1. $x^2+7=10$

$x^2=3$

$x=\pm\sqrt{3}$

2. $2x^2+1=11$

$2x^2=10$

$x^2=5$

$x=\pm\sqrt{5}$

3. $3x^2+4=2$

$3x^2=-2$

$x^2=-\frac{2}{3}$

No Real Solution

4. $(x+2)^2=25$

$x+2=\pm5$

$x=-2\pm5$

$x=3 \quad x=-7$

5. $(x-5)^2-2=22$

$(x-5)^2=24$

$x-5=\pm2\sqrt{6}$

$x=5\pm2\sqrt{6}$

6. $\frac{1}{2}(x-3)^2=8$

$(x-3)^2=16$

$x-3=\pm4$

$x=3\pm4$

$x=-1 \quad x=7$

Solve the following quadratic equations by completing the square.

7. $x^2+4x-7=0$

$x^2+4x=7$

$x^2+4x+4=7+4$

$(x+2)^2=11$

$x+2=\pm\sqrt{11}$

$x=-2\pm\sqrt{11}$

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

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

$\sqrt{(x-4)^2}=\sqrt{18}$

$x-4=\pm3\sqrt{2}$

$x=4\pm3\sqrt{2}$

9. $2x^2+4x-10=0$

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

$x^2+2x=5$

$x^2+2x+1=5+1$

$\sqrt{(x+1)^2}=\sqrt{6}$

$x+1=\pm\sqrt{6}$

$x=-1\pm\sqrt{6}$

10. $3x^2-12x=4$

$x^2-4x=\frac{4}{3}$

$x^2-4x+4=\frac{4}{3}+\frac{12}{3}$

$\sqrt{(x-2)^2}=\sqrt{\frac{16}{3}}$

$x-2=\pm\frac{4}{\sqrt{3}}$

$x=2\pm\frac{4\sqrt{3}}{3}$

Solve the following quadratic equations.

11. $x^2+13=25$

$x^2=12$

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

12. $x^2+12x-3=0$

$x^2+12x=3$

$x^2+12x+36=3+36$

$\sqrt{(x+6)^2}=\sqrt{39}$

$x+6=\pm\sqrt{39}$

$x=-6\pm\sqrt{39}$

13. $2(x-3)^2=12$

$(x-3)^2=6$

$x-3=\pm\sqrt{6}$

$x=3\pm\sqrt{6}$

14. $\frac{1}{3}x^2+5=0$

$\frac{1}{3}x^2=-5$

$x^2=-15$

No Real Solution

15. $2x^2-8x+2=0$

$x^2-4x+1=0$

$x^2-4x=-1$

$x^2-4x+4=-1+4$

$(x-2)^2=3$

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

16. $(x+5)^2-3=45$

$(x+5)^2=48$

$x+5=\pm 4\sqrt{6}$

$x=-5\pm 4\sqrt{3}$

17. $5x^2-2=2$

$5x^2=4$

$\sqrt{x^2}=\frac{\sqrt{4}}{\sqrt{5}}$

$x=\pm\frac{2\sqrt{5}}{5}$

18. $2x^2+12x=3$

$x^2+6x=\frac{3}{2}$

$x^2+6x+9=\frac{3}{2}+9$

$(x+3)^2=\frac{3}{2}+\frac{18}{2}$

$(x+3)^2=\frac{21}{2}$

$x+3=\pm\frac{\sqrt{21}}{\sqrt{2}}$

$x=-3\pm\frac{\sqrt{42}}{2}$