**Advanced Completing the Square Worksheet**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class: \_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_

Solve the following more challenging quadratic equations by completing the square. Show all your work.

 **Open Ended Questions**

1. Solve the quadratic equation by completing the square: $2x^{2}+8x−10=0$

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2. Solve the quadratic equation by completing the square: $3x^{2}−12x+9=0$

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3. Solve the quadratic equation by completing the square: $4x^{2}+16x+7=0$

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4. Solve the quadratic equation by completing the square: $5x^{2}−20x−15=0$

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5. Solve the quadratic equation by completing the square: $6x^{2}+24x+5=0$

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6. Solve the quadratic equation by completing the square: $7x^{2}−28x+13=0$

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 **Multiple Choice Questions**

1. Solve the quadratic equation by completing the square: $x^{2}+6x−15=0$

a) $x=−3+\sqrt{24}$ or $x=−3−\sqrt{24}$

b) $x=−4+\sqrt{24}$ or $x=−4−\sqrt{24}$

c) $x=−2+\sqrt{24}$ or $x=−2−\sqrt{24}$

d) $x=−3+4$ or $x=−3−4$

2. Solve the quadratic equation by completing the square: $x^{2}−8x+10=0$

a) $x=4+\sqrt{6}$ or $x=4−\sqrt{6}$

b) $x=5+\sqrt{6}$ or $x=5−\sqrt{6}$

c) $x=3+\sqrt{6}$ or $x=3−\sqrt{6}$

d) $x=6+\sqrt{6}$ or $x=6−\sqrt{6}$

3. Solve the quadratic equation by completing the square: $x^{2}+10x+21=0$

a) $x=−5+2$ or $x=−5−2$

b) $x=−4+2$ or $x=−4−2$

c) $x=−6+2$ or $x=−6−2$

d) $x=−5+\sqrt{2}$ or $x=−5−\sqrt{2}$

4. Solve the quadratic equation by completing the square: $x^{2}−12x+20=0$

a) $x=6+4$ or $x=6−4$

b) $x=5+4$ or $x=5−4$

c) $x=7+4$ or $x=7−4$

d) $x=8+4$ or $x=8−4$

5. Solve the quadratic equation by completing the square: $x^{2}+14x+30=0$

a) $x=−7+\sqrt{19}$ or $x=−7−\sqrt{19}$

b) $x=−6+\sqrt{19}$ or $x=−6−\sqrt{19}$

c) $x=−8+\sqrt{19}$ or $x=−8−\sqrt{19}$

d) $x=−7+4$ or $x=−7−4$

6. Solve the quadratic equation by completing the square: $x^{2}−14x+50=0$

a) $x=7+i$ or $x=7−i$

b) $x=6+i$ or $x=6−i$

c) $x=8+i$ or $x=8−i$

d) $x=7+1$ or $x=7−1$

**Advanced Completing the Square Worksheet - Answers**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class: \_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_

Solve the following more challenging quadratic equations by completing the square. Show all your work.

 **Open Ended Questions**

1. Solve the quadratic equation by completing the square: $2x^{2}+8x−10=0$

2. Solve the quadratic equation by completing the square: $3x^{2}−12x+9=0$

3. Solve the quadratic equation by completing the square: $4x^{2}+16x+7=0$

4. Solve the quadratic equation by completing the square: $5x^{2}−20x−15=0$

5. Solve the quadratic equation by completing the square: $6x^{2}+24x+5=0$

6. Solve the quadratic equation by completing the square: $7x^{2}−28x+13=0$

 **Multiple Choice Questions**

1. Solve the quadratic equation by completing the square: $x^{2}+6x−15=0$

a) $x=−3+\sqrt{24}$ ***or*** $x=−3−\sqrt{24}$

b) $x=−4+\sqrt{24}$ or $x=−4−\sqrt{24}$

c) $x=−2+\sqrt{24}$ or $x=−2−\sqrt{24}$

d) $x=−3+4$ or $x=−3−4$

2. Solve the quadratic equation by completing the square: $x^{2}−8x+10=0$

a) $x=4+\sqrt{6}$ ***or*** $x=4−\sqrt{6}$

b) $x=5+\sqrt{6}$ or $x=5−\sqrt{6}$

c) $x=3+\sqrt{6}$ or $x=3−\sqrt{6}$

d) $x=6+\sqrt{6}$ or $x=6−\sqrt{6}$

3. Solve the quadratic equation by completing the square: $x^{2}+10x+21=0$

a) $x=−5+2$ ***or*** $x=−5−2$

b) $x=−4+2$ or $x=−4−2$

c) $x=−6+2$ or $x=−6−2$

d) $x=−5+\sqrt{2}$ or $x=−5−\sqrt{2}$

4. Solve the quadratic equation by completing the square: $x^{2}−12x+20=0$

a) $x=6+4$ ***or*** $x=6−4$

b) $x=5+4$ or $x=5−4$

c) $x=7+4$ or $x=7−4$

d) $x=8+4$ or $x=8−4$

5. Solve the quadratic equation by completing the square: $x^{2}+14x+30=0$

a) $x=−7+\sqrt{19}$ ***or*** $x=−7−\sqrt{19}$

b) $x=−6+\sqrt{19}$ or $x=−6−\sqrt{19}$

c) $x=−8+\sqrt{19}$ or $x=−8−\sqrt{19}$

d) $x=−7+4$ or $x=−7−4$

6. Solve the quadratic equation by completing the square: $x^{2}−14x+50=0$

a) $x=7+i$ ***or*** $x=7−i$

b) $x=6+i$ or $x=6−i$

c) $x=8+i$ or $x=8−i$

d) $x=7+1$ or $x=7−1$