

A2.A.24: Completing the Square: Know and apply the technique of completing the square

- 1 Which value of k will make $x^2 - \frac{1}{4}x + k$ a perfect square trinomial?
 - 1) $\frac{1}{64}$
 - 2) $\frac{1}{16}$
 - 3) $\frac{1}{8}$
 - 4) $\frac{1}{4}$
- 2 Brian correctly used a method of completing the square to solve the equation $x^2 + 7x - 11 = 0$. Brian's first step was to rewrite the equation as $x^2 + 7x = 11$. He then added a number to both sides of the equation. Which number did he add?
 - 1) $\frac{7}{2}$
 - 2) $\frac{49}{4}$
 - 3) $\frac{49}{2}$
 - 4) 49
- 3 Which step can be used when solving $x^2 - 6x - 25 = 0$ by completing the square?
 - 1) $x^2 - 6x + 9 = 25 + 9$
 - 2) $x^2 - 6x - 9 = 25 - 9$
 - 3) $x^2 - 6x + 36 = 25 + 36$
 - 4) $x^2 - 6x - 36 = 25 - 36$
- 4 If $x^2 = 12x - 7$ is solved by completing the square, one of the steps in the process is
 - 1) $(x - 6)^2 = -43$
 - 2) $(x + 6)^2 = -43$
 - 3) $(x - 6)^2 = 29$
 - 4) $(x + 6)^2 = 29$
- 5 If $x^2 + 2 = 6x$ is solved by completing the square, an intermediate step would be
 - 1) $(x + 3)^2 = 7$
 - 2) $(x - 3)^2 = 7$
 - 3) $(x - 3)^2 = 11$
 - 4) $(x - 6)^2 = 34$
- 6 Max solves a quadratic equation by completing the square. He shows a correct step:
$$(x + 2)^2 = -9$$
What are the solutions to his equation?
 - 1) $2 \pm 3i$
 - 2) $-2 \pm 3i$
 - 3) $3 \pm 2i$
 - 4) $-3 \pm 2i$
- 7 Find the exact roots of $x^2 + 10x - 8 = 0$ by completing the square.
- 8 Solve $2x^2 - 12x + 4 = 0$ by completing the square, expressing the result in simplest radical form.

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Answer Section

1 ANS: 1

$$\left(\frac{1}{2}\left(-\frac{1}{4}\right)\right)^2 = \frac{1}{64}$$

REF: 081527a2

2 ANS: 2

REF: 061122a2

3 ANS: 1

REF: 060408a2

4 ANS: 3

$$x^2 = 12x - 7$$

$$x^2 - 12x = -7$$

$$x^2 - 12x + 36 = -7 + 36$$

$$(x - 6)^2 = 29$$

REF: 061505a2

5 ANS: 2

$$x^2 + 2 = 6x$$

$$x^2 - 6x = -2$$

$$x^2 - 6x + 9 = -2 + 9$$

$$(x - 3)^2 = 7$$

REF: 011116a2

6 ANS: 2

$$(x + 2)^2 = -9$$

$$x + 2 = \pm\sqrt{-9}$$

$$x = -2 \pm 3i$$

REF: 011408a2

7 ANS:

$$x^2 + 10x + 25 = 8 + 25$$

$$(x + 5)^2 = 33$$

$$x + 5 = \pm\sqrt{33}$$

$$x = -5 \pm \sqrt{33}$$

REF: 011636a2

8 ANS:

$$3 \pm \sqrt{7}. \quad 2x^2 - 12x + 4 = 0$$

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

$$x^2 - 6x = -2$$

$$x^2 - 6x + 9 = -2 + 9$$

$$(x - 3)^2 = 7$$

$$x - 3 = \pm\sqrt{7}$$

$$x = 3 \pm \sqrt{7}$$

REF: fall0936a2