

1. Factor the expression:  $36y^2 - 49$

- [A]  $(6y+7)(6y-7)$
- [B]  $(36y+1)(y-49)$
- [C]  $(6y+7)(6y+7)$
- [D]  $(6y-7)(6y-7)$

2. Solve:  $x^2 + 4x = 0$

- [A] 0, 4
- [B] 0, -4
- [C] -4, 4
- [D] -4, 3

3. What are the solutions to the equation?

$$x^2 = -4x + 21$$

- [A]  $x = 7$  or  $x = -3$
- [B]  $x = 21$  or  $x = -1$
- [C]  $x = 1$  or  $x = -21$
- [D]  $x = 3$  or  $x = -7$

4. What are the solutions to the equation?

$$x^2 + 2x - 24 = 0$$

- [A]  $x = 4$  or  $x = -6$
- [B]  $x = 6$  or  $x = -4$
- [C]  $x = 24$  or  $x = -1$
- [D]  $x = 1$  or  $x = -24$

5. Find the zeros of the equation.  $2x^2 - x = 10 + y$

- [A]  $x = 2$  and  $x = -\frac{5}{2}$
- [B]  $x = -2$  and  $x = \frac{5}{2}$
- [C]  $x = 2$  and  $x = -\frac{2}{5}$
- [D]  $x = -2$  and  $x = \frac{2}{5}$

Simplify the expression:

$$6. 4\sqrt{242} \cdot \sqrt{22}$$

- [A]  $17\sqrt{2}$
- [B]  $22\sqrt{11}$
- [C]  $90\sqrt{2}$
- [D]  $88\sqrt{11}$

Simplify the expression:

$$7. \frac{\sqrt{2695}}{\sqrt{1925}}$$

$$[A] \frac{77\sqrt{35}}{5} \quad [B] \frac{7\sqrt{11}}{\sqrt{77}}$$

$$[C] \frac{7\sqrt{55}}{5\sqrt{77}} \quad [D] \frac{\sqrt{35}}{5}$$

8. Solve for  $x$ :  $6x^2 = 24$

$$[A] 2 \quad [B] 12$$
$$[C] \sqrt{144} \quad [D] \sqrt{18}$$

9.  $3x^2 - 8 = 4$

$$[A] \pm 2 \quad [B] \pm 4$$
$$[C] \pm \frac{4}{3} \quad [D] \text{no real-number solution}$$

10.  $x^2 + 8x + 25 = 0$

$$[A] -4 + 6i, -4 - 6i$$
$$[B] 4 + 3i, 4 - 3i$$
$$[C] 4 + 6i, 4 - 6i$$
$$[D] -4 + 3i, -4 - 3i$$

11. Write the expression as a complex number in standard form.  $(7 + 6i) - (9 + 3i)$

$$[A] 45 + 75i \quad [B] -2 + 3i$$
$$[C] 16 + 9i \quad [D] 16 - 9i$$

12. Find the absolute value of the complex number.  $-4 - 9i$

$$[A] 9.85 \quad [B] 8.06$$
$$[C] 97 \quad [D] 65$$

13. Solve by completing the square:  $-8x = 3x^2 - 1$

[A]  $\frac{-4 + \sqrt{19}}{3}$  and  $\frac{-4 - \sqrt{19}}{3}$

[B]  $\frac{4 + \sqrt{13}}{3}$  and  $\frac{4 - \sqrt{13}}{3}$

[C]  $\frac{4 + \sqrt{19}}{3}$  and  $\frac{4 - \sqrt{19}}{3}$

[D]  $\frac{-4 + \sqrt{13}}{3}$  and  $\frac{-4 - \sqrt{13}}{3}$

14. Solve by completing the square:  $x^2 + 6x - 40 = 0$

[A] 10, 4

[B] 10, -4

[C] -10, -4

[D] -10, 4

Solve by completing the square:

15.  $-2x^2 - 20x - 6 = 0$

[A]  $x = -5 + \sqrt{22}$  and  $-5 - \sqrt{22}$

[B]  $x = -5 + 2\sqrt{7}$  and  $-5 - 2\sqrt{7}$

[C]  $x = 5 + \sqrt{22}$  and  $5 - \sqrt{22}$

[D]  $x = 5 + 2\sqrt{7}$  and  $5 - 2\sqrt{7}$

16.  $4x^2 - 48x = 12$

[A]  $x = -6 + \sqrt{39}$  and  $-6 - \sqrt{39}$

[B]  $x = 6 + \sqrt{39}$  and  $6 - \sqrt{39}$

[C]  $x = -6 + \sqrt{33}$  and  $-6 - \sqrt{33}$

[D]  $x = 6 + \sqrt{33}$  and  $6 - \sqrt{33}$

19. Use the quadratic formula to solve:  $x^2 + 5x + 1 = 0$

[A]  $\frac{-5 + \sqrt{21}}{2}$ ,  $\frac{-5 - \sqrt{21}}{2}$

[B]  $\frac{-5 + \sqrt{29}}{2}$ ,  $\frac{-5 - \sqrt{29}}{2}$

[C]  $\frac{5 + \sqrt{21}}{2}$ ,  $\frac{5 - \sqrt{21}}{2}$

[D]  $\frac{5 + \sqrt{29}}{2}$ ,  $\frac{5 - \sqrt{29}}{2}$

20. Solve by the quadratic formula:  $x^2 - 5x + 1 = 0$

[A]  $\frac{5 + \sqrt{21}}{2}$ ,  $\frac{5 - \sqrt{21}}{2}$

[B]  $\frac{-5 + \sqrt{29}}{2}$ ,  $\frac{-5 - \sqrt{29}}{2}$

[C]  $\frac{5 + \sqrt{29}}{2}$ ,  $\frac{5 - \sqrt{29}}{2}$

[D]  $\frac{-5 + \sqrt{21}}{2}$ ,  $\frac{-5 - \sqrt{21}}{2}$

Solve:

21.  $9x^2 - 60x = -100$

[A]  $x = \frac{3}{10}$ ,  $\frac{10}{3}$

[B]  $x = -\frac{3}{20}$ ,  $-\frac{20}{3}$

[C]  $x = -\frac{20}{3}$

[D]  $x = \frac{10}{3}$

Solve:

22.  $3x^2 + 5x = -4$

[A]  $\frac{5+i\sqrt{23}}{6}$ ,  $\frac{5-i\sqrt{23}}{6}$

[B]  $\frac{5+i\sqrt{73}}{6}$ ,  $\frac{5-i\sqrt{73}}{6}$

[C]  $\frac{-5+i\sqrt{23}}{6}$ ,  $\frac{-5-i\sqrt{23}}{6}$

[D]  $\frac{-5+i\sqrt{73}}{6}$ ,  $\frac{-5-i\sqrt{73}}{6}$

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Reference: [5.2.1.28]

[1] [A]

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Reference: [5.2.1.29]

[2] [B]

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Reference: [5.2.1.31]

[3] [D]

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Reference: [5.2.1.32]

[4] [A]

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Reference: [5.2.2.40]

[5] [B]

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Reference: [5.3.1.42]

[6] [D]

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Reference: [5.3.1.43]

[7] [D]

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Reference: [5.3.1.45]

[8] [A]

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Reference: [5.3.1.47]

[9] [A]

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Reference: [5.4.1.59]

[10] [D]

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Reference: [5.4.1.72]

[11] [B]

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Reference: [5.4.2.91]

[12] [A]

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Reference: [5.5.1.99]

[13] [A]

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Reference: [5.5.1.100]

[14] [D]

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Reference: [5.5.1.106]

[15] [A]

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Reference: [5.5.1.107]

[16] [B]

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Reference: [5.5.1.109]

[17] [A]

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Reference: [5.5.1.110]

[18] [A]

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Reference: [5.6.1.118]

[19] [A]

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Reference: [5.6.1.120]

[20] [A]

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Reference: [5.6.1.124]

[21] [D]

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Reference: [5.6.1.126]

[22] [C]