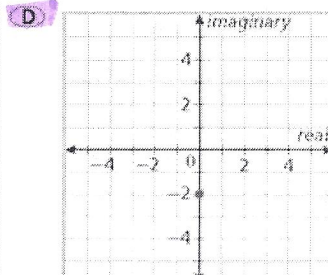
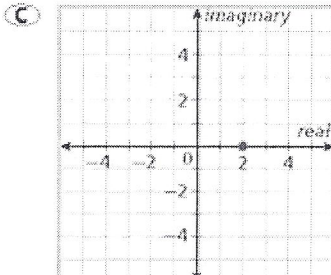
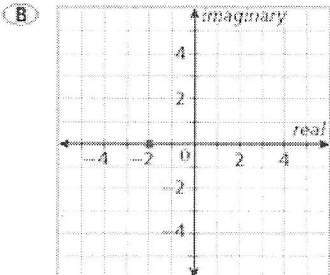
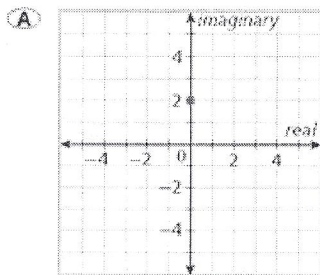


This review is only a guide to help you prepare for the midterm. It does NOT cover everything! Make sure you look over old notes, quizzes, and tests.

1. Graph the complex number $-2i$.



2. Express $8\sqrt{-84}$ in terms of i .

- F $-16i\sqrt{21}$
- G $\sqrt{-5376}$
- H $16i\sqrt{21}$
- J $-16\sqrt{21}$

3. Find the absolute value $|-7 - 9i|$.

- A $\sqrt{130}$
- B 4
- C $4\sqrt{2}$
- D -16

4. Multiply $6i(4 - 6i)$. Write the result in the form $a + bi$.

- F $-36 + 24i$
- G $-36 - 24i$
- H $36 - 24i$
- J $36 + 24i$

5. Find the values of x and y that make the equation $-9x + 8i = -54 + (16y)i$ true.

- A $x = \frac{1}{6}, y = 2$
- B $x = 6, y = \frac{1}{2}$
- C $x = \frac{1}{6}, y = \frac{1}{2}$
- D $x = 6, y = 2$

1. Express $2\sqrt{-97}$ in terms of i .

- A $2i\sqrt{97}$
- B $-2i\sqrt{97}$
- C $-2\sqrt{97}$
- D $\sqrt{-388}$

2. Solve the equation $2x^2 + 72 = 0$.

- F $x = \pm 6 + i$
- H $x = \pm 6i$
- G $x = 6 \pm i$
- J $x = \pm 6$

3. Find the values of x and y that make the equation $5x + 6i = -35 - (24y)i$ true.

- A $x = -7, y = -\frac{1}{4}$
- B $x = -\frac{1}{7}, y = -\frac{1}{4}$
- C $x = -\frac{1}{7}, y = -4$
- D $x = -7, y = -4$

4. What value(s) of x satisfy $x^2 + 8x + 32 = 0$?

- F $x = -8 + 4i$ or $-8 - 4i$
- G $x = -4 + 4i$ or $-4 - 4i$
- H $x = 4i$ or $-4i$
- J $x = -4 + 4i$

5. Find the complex conjugate of $5i + 7$.

- A $7 - 5i$
- B $5i - 7$
- C $7 + 5i$
- D $-7 - 5i$

6. Find the absolute value $|-6 + 9i|$.

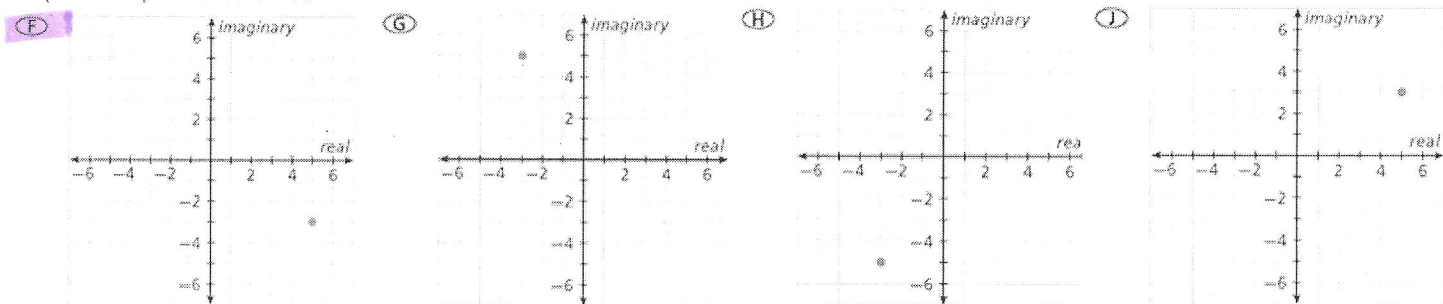
- F 3
- H $3\sqrt{13}$
- G $3\sqrt{5}$
- J $\sqrt{3}$

7. Add. Write the result in the form $a + bi$.

$(4 + 3i) + (5 + 9i)$

- A $13 + 8i$
- B $9 + 12i$
- C $-1 - 6i$
- D $7 + 14i$

8. Graph the complex number $5 - 3i$.



9. Rewrite $\sqrt[3]{x^7}$ in rational exponent form.

- A x^{10} C $x^{\frac{7}{3}}$
 B $x^{\frac{7}{3}}$ D x^4

10. Rewrite $x^{\frac{3}{5}}$ in radical form.

- F $\sqrt[3]{x^5}$ H $\frac{1}{5}x^9$
 G x^4 J $\sqrt[5]{x^3}$

11. Express $\sqrt{192}$ in simplest radical form.

- A $\sqrt{32} \cdot \sqrt{6}$
 B $3\sqrt{64}$
 C $8\sqrt{3}$
 D $\sqrt{192}$ is already in simplest radical form.

12. Simplify the expression $\frac{x^{\frac{3}{2}}}{x^{\frac{1}{2}}}$. Assume x is positive.

- F $x^{\frac{3}{2}}$ H $x^{\frac{10}{9}}$
 G $x^{\frac{5}{2}}$ J x

1. Factor $x^2 + 20x + 36$.

- A $(x + 20)(x + 36)$
 B $(x + 10)(x + 10)$
 C $(x + 2)(x + 18)$
 D $(x + 4)(x + 9)$

2. Determine whether $81 - 49n^4$ is a difference of two squares. If so, factor it. If not, explain why.

- F $(9 - 7n^4)(9 + 7n^4)$
 G $(9 + 7n^2)(9 - 7n^2)$
 H $(9 - 7n^2)(9 - 7n^2)$
 J Not a difference of squares because $-49n^4$ is not a perfect square.

3. Determine whether $16x^2 - 24x + 9$ is a perfect square. If so, factor it. If not, explain why.

- A No, $16x^2 - 24x + 9$ is not a perfect square. $16x^2$ and 9 are perfect squares, but $24x$ is not a perfect square. So $16x^2 - 24x + 9$ is not a perfect square.
 B Yes, $16x^2 - 24x + 9$ is a perfect square. $(4x + 3)^2$
 C Yes, $16x^2 - 24x + 9$ is a perfect square. $(4x - 3)^2$
 D Yes, $16x^2 - 24x + 9$ is a perfect square. $(16x - 9)^2$

4. Factor $-3x^2 + 26x - 16$.

- F $-(x - 8)(3x - 2)$
 G $(3x - 2)(x - 8)$
 H $-(x + 8)(3x + 2)$
 J $(3x - 2)(x + 8)$

5. Factor $2x^2 + 7x + 6$.

- A $(x + 2)(2x - 3)$
 B $(x + 2)(x + 3)$
 C $(x + 3)(2x + 2)$
 D $(x + 2)(2x + 3)$

6. Factor the trinomial $x^4 + 50x^2 + 625$.

- F $(x + 25)^4$
 G $(x^2 + 50)^2$
 H $(x^2 + 25)^2$
 J $2(x^2 + 25)^2$

7. Factor $3x^2 + 2x - 8$ by guess and check.

- (A) $(x + 2)(3x - 4)$
- (B) $(x - 2)(3x + 4)$
- (C) $(x - 2)(3x - 4)$
- (D) $(x + 2)(3x + 4)$

8. Factor the trinomial $42n^2 - n - 30$.

- (F) $(6n + 5)(7n - 6)$
- (G) $(6n + 6)(7n - 5)$
- (H) $(6n - 5)(7n + 6)$
- (J) Cannot be factored

9. Which expression is not a factor of the binomial $x^4 - 16$?

- (A) $x - 2$
- (B) $x + 2$
- (C) $x - 4$
- (D) $x^2 + 4$

1. What sequence of transformations can you use to map the graph of $f(x) = x^2$ onto the graph of $g(x) = -8x^2$?

- (A) A reflection across the x -axis and a vertical stretch by a factor of 8.
- (B) A reflection across the x -axis and a horizontal compression by a factor of 8.
- (C) A reflection across the x -axis and a horizontal stretch by a factor of 8.
- (D) A reflection across the x -axis and a vertical compression by a factor of 8.

2. Find the minimum or maximum value of $f(x) = x^2 - 2x - 6$. Then state the domain and range of the function.

- (F) The maximum value is 1.
D: {all real numbers}; R: $\{y \mid y \geq -7\}$
- (G) The minimum value is -7 .
D: $\{x \mid x \geq -7\}$; R: {all real numbers}
- (H) The maximum value is 1.
D: $\{x \mid x \geq -7\}$; R: {all real numbers}
- (J) The minimum value is -7 .
D: {all real numbers}; R: $\{y \mid y \geq -7\}$

3. The distance d in meters traveled by a skateboard on a ramp is related to the time traveled t in seconds. This is modeled by the function: $d(t) = 4.9t^2 - 2.3t + 5$. What is the maximum distance the skateboard can travel, and at what time would it achieve this distance? Round your answers to the nearest hundredth.

- (A) 5.00 meters in 0 seconds
- (B) 0.23 meters at 4.73 seconds
- (C) 4.73 meters at 0.23 seconds
- (D) 5.00 meters at 0.47 seconds

1. Complete the square for the expression $x^2 - 16x + \underline{\hspace{1cm}}$. Write the resulting expression as a binomial squared.

- (A) $(x - 8)^2$
- (B) $(x + 8)^2$
- (C) $(x + 16)^2$
- (D) $(x - 16)^2$

2. Find the zeros of $f(x) = x^2 + 7x + 9$ by using the Quadratic Formula.

- (F) $x = -7 \pm \sqrt{13}$
- (G) $x = \frac{-7 \pm \sqrt{13}}{2}$
- (H) $x = \frac{3 \pm \sqrt{7}}{2}$
- (J) $x = 3 \pm \sqrt{7}$

3. Find the zeros of the function $f(x) = x^2 + 23x + 60$ by factoring.

- (A) $x = -20$ or $x = -3$
- (B) $x = 4$ or $x = 15$
- (C) $x = -4$ or $x = -15$
- (D) $x = 20$ or $x = 3$

4. Solve the equation $x^2 = 3 - 2x$ by completing the square.

- (F) $x = 2$ or $x = -2$
- (G) $x = 1$ or $x = -3$
- (H) $x = -1$ or $x = 3$
- (J) $x = 2$ or $x = -6$

5. Find the zeros of $g(x) = 4x^2 - x + 5$ by using the Quadratic Formula.
- (A) $x = \frac{1}{2} \pm \frac{\sqrt{79}}{2}i$
- (B) $x = -\frac{1}{8} \pm \frac{\sqrt{79}}{8}i$
- (C) $x = \frac{1}{8} \pm \frac{\sqrt{81}}{8}i$
- (D) $x = \frac{1}{8} \pm \frac{\sqrt{79}}{8}i$

6. Find the roots of the equation $30x - 45 = 5x^2$ by factoring.
- (F) $x = 9$
- (G) $x = -9$
- (H) $x = 3$
- (J) $x = -3$

7. During the eruption of Mount St. Helens in 1980, debris was ejected at a speed of over 440 feet per second (300 miles per hour). The height in feet of a rock ejected at an angle of 75° is given by the equation $y(t) = -16t^2 + 425t + 8200$, where t is the time in seconds after the eruption. The rock's horizontal distance in feet from the point of ejection is given by $x(t) = 113t$. Assuming the elevation of the surrounding countryside is 0 feet, what is the horizontal distance from the point of ejection to where the rock would have landed? Round your answer to the nearest foot.

- (A) 2,234 ft
- (B) 8,932 ft
- (C) 4,467 ft
- (D) 1,117 ft

8. Solve the equation $x^2 - 10x + 25 = 54$.

- (F) $x = 5 \pm 3\sqrt{6}$
- (G) $x = 5 + 3\sqrt{6}$
- (H) $x = 5 - 3\sqrt{6}$
- (J) $x = 5 \pm 6\sqrt{3}$

*P. 130 #1-4, 6, 7, 9-14, 16-24

(Your online textbook is working!)

- | | | |
|-------|-------|-------|
| 1. B | 9. B | 17. A |
| 2. G | 10. H | 18. F |
| 3. A | 11. D | 19. C |
| 4. H. | 12. J | 20. J |
| 6. J | 13. C | 21. B |
| 7. D | 14. F | 22. J |
| | 16. G | 23. B |
| | | 24. H |