

Multiple Choice

Identify the choice that best completes the statement or answers the question.

NOTA - None of the above

1 Simplify the following. $(3i) + (4 - 6i) + (3-4i)$

- A) $1 + 3i$ B) $1 + i$ C) $-7 + i$ D) $7 - 7i$ E) NOTA

2 Write the standard for equation of a circle with center $(-4, 5)$ and radius $\sqrt{93}$.

- A) $(x + 4)^2 + (y - 5)^2 = 93$ B) $(x - 2)^2 + (y - 5)^2 = 93$ C) $(x - 5)^2 + (y - 4)^2 = 93$
D) $(x - 5)^2 + (y - 4)^2 = 93$ E) NOTA

3 Find the absolute value of the complex number $|-38 + 8i|$

- A) $2\sqrt{377}$ B) $\sqrt{46}$ C) $\sqrt{1493}$ D) $\sqrt{1585}$ E) NOTA

4 Simplify the following. $\frac{10}{2+5\sqrt{10}}$

- A) $\frac{-10+25\sqrt{10}}{123}$ B) $\frac{10+50\sqrt{10}}{249}$ C) $\frac{-1+\sqrt{7}}{3}$ D) $\frac{-10+15\sqrt{10}}{43}$ E) NOTA

5 Expand the following logarithm. $\log_7 \frac{x^4}{y^5}$

- A) $\log_7 z + \frac{\log_7 x}{2} + \frac{\log_7 y}{2}$ B) $\frac{\log_7 x}{2} + \frac{\log_7 y}{2} + \frac{\log_7 z}{2}$ C) $4 \log_7 x - 5 \log_7 y$
D) $4 \log_7 x + 5 \log_7 y$ E) NOTA

6 Simplify the following. $3h^{4:4} \cdot h^{3:4}k^3$

- A) $3h^7j^8k^3$ B) $\frac{2k^4}{hj^2}$ C) $\frac{9h^5j^5}{k^7}$ D) $\frac{3k}{h^4j^2}$ E) NOTA

7 Identify the domain and range of the following. $y = 3 + \sqrt{x + 1}$

- A) D: $x \geq -1$ R: $y \geq -3$ B) D: $x \geq -1$ R: $y \leq 3$ C) D: $x \geq 3$ R: $y \geq 1$ D) D: $x \geq -1$ R: $y \geq 3$ E) NOTA

8 Solve the following equation $\log_{12}(-4x + 9) = \log_{12}(-5x + 2)$

- A) $\{10\}$ B) $\{1\}$ C) $\{-7\}$ D) $\{-11\}$ E) NOTA

9 Use the information given provided to write the vertex form equation of a parabola.

Vertex: $(0, 5)$, Focus: $(\frac{1}{4}, 5)$

- A) $x = -y^2 + 5$ B) $x = -(y - 5)^2$ C) $x = (y - 5)^2$
D) $x = (-y + 6)^2$ E) NOTA

10 Simplify the following radical. Use absolute value signs when necessary. $\sqrt[3]{500x^6y^8}$

- A) $5x^2y^2\sqrt[3]{4y^2}$ B) $-4y\sqrt[3]{6x^2y}$ C) $-3xy^2\sqrt[3]{4x^2y^2}$
D) $5xy^2\sqrt[3]{7}$ E) NOTA

11 Simplify the following $(2i)(1 - 6i)(-7 + 5i)$

- A) $-72 + 60i$ B) $69 + 141i$ C) $-94 + 46i$ D) $-74 + 74i$ E) NOTA

12 Solve the following equation. Round your answers to the nearest ten-thousandth. $4^r = 2$

- A) 0.301 B) 0.6931 C) No Solution D) 0.5 E) NOTA

13 Evaluate the expression $\log_7 \frac{1}{49}$

- A) $\frac{1}{343}$ B) 3 C) 2 D) -2 E) NOTA

14 Classify the following equation as a conic: $-25x^2 + y^2 - 50x - 50 = 0$

- A) Parabola B) Hyperbola C) Ellipse D) Circle E) NOTA

15 Simplify the following expression: $\frac{-7-5i}{-7+3i}$

- A) $\frac{17+28i}{29}$ B) $\frac{63+27i}{58}$ C) $\frac{-7-5i}{2}$ D) $\frac{35+15i}{29}$ E) NOTA

16 Condense the following expression into a single logarithm. $\log_6 11 + 2 \log_6 7 + 2 \log_6 12$

- A) $\log_6 \frac{11^2}{12^2 \cdot 7^4}$ B) $\log_6(11 \cdot 12^2 \cdot 7^2)$ C) $\log_6 \frac{11^4}{12^2 \cdot 7^2}$
D) $\log_6 \sqrt{6468}$ E) NOTA

17 Solve the following equation: $\sqrt{-5 - 5m} = 2 + \sqrt{3 - m}$

- A) $\{6\}$ B) $\{-6, 2\}$ C) $\{-6, -10\}$ D) $\{-4, -6\}$ E) NOTA

18 Use the information provided to write the standard form equation of a hyperbola.

Vertices: $(-3, 19)$ and $(-3, -5)$

Foci: $(-3, 20)$ and $(-3, -6)$

- A) $\frac{(y-7)^2}{144} - \frac{(x+3)^2}{25} = 1$ B) $\frac{(y-7)^2}{25} - \frac{(x+3)^2}{144} = 1$ C) $\frac{(y+3)^2}{25} - \frac{(x-7)^2}{144} = 1$
 D) $\frac{(y+7)^2}{25} - \frac{(x+3)^2}{144} = 1$ E) NOTA

19 Simplify the following: $(-2 - i)(-2 - 2i)$

- A) $2 + 6i$ B) $8 + 4i$ C) $12 + 6i$ D) $6 + 10i$ E) NOTA

20 Simplify the following. Answer should contain only positive exponents.

$$\frac{3a^4b^4 \cdot 4ba^0}{2b^2 \cdot 3ab^4}$$

- A) $\frac{8b^4}{a^4}$ B) $\frac{2}{a^{10}}$ C) $\frac{2a^3}{b}$ D) $\frac{a^2}{b^7}$ E) NOTA

21 Expand the following logarithm: $\log_4 \sqrt{u \cdot v \cdot w}$

- A) $5 \log_4 u + 25 \log_4 v$ B) $\log_4 u + \log_4 v + 5 \log_4 w$ C) $5 \log_4 u + 5 \log_4 v$
 D) $\frac{\log_4 u}{2} + \frac{\log_4 v}{2} + \frac{\log_4 w}{2}$ E) NOTA

22 Solve the following equation: $64^{n-3} = 4^2$

- A) $\{\frac{2}{3}\}$ B) $\{\frac{11}{3}\}$ C) $\{0\}$ D) $\{-5\}$ E) NOTA

23 Simplify the following expression: $\frac{-5+i}{10i}$

- A) $\frac{5i+1}{10}$ B) $\frac{i}{5}$ C) $\frac{7i+1}{10}$ D) $\frac{i}{10}$ E) NOTA

24 Use the information provided to write the standard equation of an ellipse.

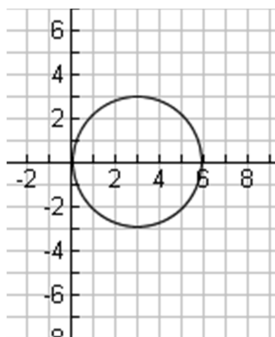
Center: $(7, 7)$

Vertex: $(17, 7)$

Focus: $(15, 7)$

- A) $\frac{(x+7)^2}{100} + \frac{(y+7)^2}{36} = 1$ B) $\frac{(x-7)^2}{36} + \frac{(y+7)^2}{100} = 1$ C) $\frac{(x-7)^2}{4} + \frac{(y-7)^2}{25} = 1$
 D) $\frac{(x-7)^2}{100} + \frac{(y-7)^2}{36} = 1$ E) NOTA

25 Use the information provided to write the general conic form of the following circle:



- A) $x^2 + y^2 - 2x - 8 = 0$
 B) $x^2 + y^2 + 2x - 8 = 0$
 C) $x^2 + y^2 - 6x = 0$
 D) $x^2 + y^2 - 6x + 8 = 0$
 E) NOTA

SOLUTIONS ADVANCED ALGEBRA

1. D

2. A

3. A

4. A

5. C

6. A

7. D

8. C

9. C

10. A

11. C

12. D

13. D

14. B

15. A

16. B

17. A

18. A

19. A

20. C

21. D

22. B

23. A

24. D

25. C