ILLINOIS ALGEBRA 2 · FINAL EXAM · 50 QUESTIONS

Final Exam — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **If f(x) = 3x - 7, then f(-2) is**

- A -13
- B 13
- C 1
- D -1

Understand It with Pulse | Flag a mistake

2 **The leading coefficient of $-2x^4 + 5x^2 - x + 7$ is**

- A -2
- B 4
- C 7
- D 5

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3 The value of $\log_3 81$ is

- A 9
- B 4
- C 27
- D 3

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4 The median of 3, 5, 7, 9, 11 is

- A 9
- B 7
- C 11
- D 5

Understand It with Pulse | Flag a mistake

5 The domain of $f(x) = \frac{1}{x + 2}$ is

- **A** $x \neq -2$
- **B** all real numbers
- **C** $x \neq 2$
- **D** $x \geq -2$

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6 A factored form of $x^2 + 5x + 6$ is

- **A** $(x - 2)(x + 3)$
- **B** $(x + 1)(x + 6)$
- **C** $(x - 2)(x - 3)$
- **D** $(x + 2)(x + 3)$

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7 The solution of $\log_2 x = 4$ is

- A 8
- B 16
- C 2
- D 64

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8 In a normal distribution with mean 100 and standard deviation 15, about what percent of values lie within one standard deviation of the mean?

- A 68%
- B 95%
- C 99.7%
- D 50%

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9 **The inverse of f(x) = 5x - 10 is**

- **A** $f^{-1}(x) = \frac{x + 10}{5}$
- **B** $f^{-1}(x) = 5x + 10$
- **C** $f^{-1}(x) = \frac{x}{5} - 10$
- **D** $f^{-1}(x) = \frac{x - 10}{5}$

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10 **For $(x - 2)^2(x + 1)$, the multiplicity of the zero 2 is**

- **A** 2
- **B** 3
- **C** 0
- **D** 1

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11 **A sample of 800 grams has a half-life of 10 years. After 20 years, the mass remaining, in grams, is**

- **A** 100
- **B** 600
- **C** 400
- **D** 200

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12 **The probability of drawing a red card from a standard 52-card deck is**

- **A** $\frac{1}{4}$
- **B** $\frac{1}{2}$
- **C** $\frac{1}{13}$
- **D** $\frac{3}{4}$

Understand It with Pulse | Flag a mistake

13 Given f(x) = x + 3 and g(x) = 2x - 1, the value of (g ° f)(2) is

- A 9
- B 7
- C 5
- D 11

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14 The graph of $y = \frac{x^2 - 4}{x - 2}$ has a hole at

- A x = -2
- B x = 2
- C x = 4
- D y = 2

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15 The exact value of $\tan(\frac{\pi}{4})$ is

A $\frac{\sqrt{3}}{3}$

B $\sqrt{3}$

C 1

D 0

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16 The number of combinations of 3 students chosen from 8 is

A 168

B 24

C 56

D 336

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17 The average rate of change of $f(x) = x^2$ on the interval $1 \leq x \leq 4$ is

- **A** 6
- **B** 5
- **C** 15
- **D** 4

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18 The solution of $\frac{x}{x - 1} = 2$ is

- **A** x = -1
- **B** x = 1
- **C** x = -2
- **D** x = 2

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19 **The amplitude of y = 3cos x + 1 is**

A 4

B 3

C 2

D 1

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20 **Which correlation coefficient shows the strongest linear relationship?**

A -0.30

B 0.45

C -0.92

D 0.85

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21 **The x-intercept of y = 2x - 6 is**

A -3

B 6

C 3

D -6

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22 **The zeros of $x^2 + 4$ are**

A 4, -4

B none

C 2, -2

D 2i, -2i

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23 The number of solutions of $\sin x = \frac{1}{2}$ on $0 \le x < 2\pi$ is

ANSWER _____

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24 A bag has 3 red marbles and 5 blue marbles. The probability of drawing a blue marble is

A $\frac{5}{8}$

B $\frac{5}{3}$

C $\frac{3}{5}$

D $\frac{3}{8}$

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25 **Compared to the graph of y = f(x), the graph of y = -2f(x) has been**

- **A** reflected in the x-axis and vertically compressed by a factor of 2
- **B** reflected in the y-axis and vertically stretched by a factor of 2
- **C** vertically stretched by a factor of 2 only
- **D** reflected in the x-axis and vertically stretched by a factor of 2

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26 **The horizontal asymptote of $y = \frac{3x + 1}{x^2 + 2}$ is**

- **A** y = 1
- **B** none
- **C** y = 3
- **D** y = 0

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27 **An item worth 20000 dollars loses 10% of its value each year. After 2 years, its value, in dollars, is**

ANSWER _____

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28 **A fair die is rolled twice. The probability that both rolls are even is**

A $\frac{1}{6}$

B $\frac{1}{4}$

C $\frac{1}{2}$

D $\frac{1}{3}$

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29 The larger zero of $y = x^2 - 5x + 6$ is

- **A** 6
- **B** 1
- **C** 2
- **D** 3

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30 The solution of $\frac{x + 3}{x} = 2$ is

- **A** x = -3
- **B** x = 3
- **C** x = 6
- **D** x = 1

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31 **The value of 2^5 is**

- A 10
- B 25
- C 32
- D 64

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32 **The mean of 5, 10, 15 is**

- A 5
- B 15
- C 10
- D 20

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33 The domain of $f(x) = \frac{1}{2x - 6}$ is

- **A** $x \neq -3$
- **B** $x \neq 3$
- **C** all real numbers
- **D** $x \neq 6$

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34 If $f(x) = 2x^3 - x^2 + 4$, then the remainder when $f(x)$ is divided by $x - 1$ is

- **A** 5
- **B** 1
- **C** 7
- **D** 3

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35 **The expression log x + log y is equivalent to**

- A $\log x \cdot \log y$
- B $\log(x + y)$
- C $\log(xy)$
- D $\log(\frac{x}{y})$

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36 **In a normal distribution, about what percent of values lie within two standard deviations of the mean?**

- A 99.7%
- B 68%
- C 50%
- D 95%

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37 Given f(x) = x - 4 and g(x) = 3x, the value of (f ° g)(2) is

- **A** 2
- **B** 10
- **C** -2
- **D** 6

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38 The horizontal asymptote of $y = \frac{5x^2 - 1}{2x^2 + 3}$ is

- **A** $y = 5$
- **B** $y = 2$
- **C** $y = \frac{5}{2}$
- **D** $y = \frac{2}{5}$

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39 **A bank balance of 1000 dollars grows by 5% each year. After 2 years, the balance, in dollars, is**

ANSWER _____

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40 **The probability of drawing a face card (jack, queen, or king) from a standard 52-card deck is**

A $\frac{1}{4}$

B $\frac{1}{2}$

C $\frac{1}{13}$

D $\frac{3}{13}$

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41 **The point (6, 3) lies on the graph of y = f(x). The image of this point on the graph of y = f(2x) is**

- A (6, 6)
- B (3, 6)
- C (12, 3)
- D (3, 3)

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42 **As x → -∞, the value of $2x^3 + x$ approaches**

- A 2
- B positive infinity
- C negative infinity
- D 0

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43 **An angle of -60° is coterminal with**

A 120°

B 300°

C 240°

D 60°

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44 **A correlation of -0.15 shows**

A a strong negative relationship

B no relationship at all

C a strong positive relationship

D a weak negative relationship

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45 **The function f(x) = x² is**

A even

B neither even nor odd

C both even and odd

D odd

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46 **The zeros of x² + 9 are**

A 9, -9

B none

C 3, -3

D 3i, -3i

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47 **The number of solutions of $\cos x = 0$ on $0 \le x < 2\pi$ is**

ANSWER _____

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48 **The probability of at least one head in two fair coin flips is**

A $\frac{1}{4}$

B $\frac{1}{2}$

C $\frac{3}{4}$

D 1

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49 The larger solution of $|2x - 1| = 5$ is

- **A** 2
- **B** -2
- **C** 3
- **D** -3

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50 The graph below shows $y = x^3 - 3x$. The sum of its zeros is

ANSWER _____

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ANSWER KEY

1. A
2. A
3. B
4. B
5. A
6. D
7. B
8. A
9. A
10. A
11. D
12. B
13. A
14. B
15. C
16. C
17. B
18. D
19. B
20. C
21. C
22. D
23. 2
24. A
25. D
26. D
27. 16200
28. B
29. D
30. B
31. C
32. C
33. B
34. A
35. C
36. D
37. A
38. C
39. 1102.5
40. D
41. D
42. C
43. B
44. D
45. A
46. D
47. 2
48. C
49. C
50. 0

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