ALASKA ALGEBRA II · 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 **The sum of the solutions of $|x + 3| = 5$ is**

- A -6
- B 10
- C -10
- D 6

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2 **The larger zero of $x^2 - 8x + 15$ is**

- A 3
- B -3
- C 5
- D -5

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3 The value of 3^{-2} is

- **A** -9
- **B** -6
- **C** 9
- **D** $\frac{1}{9}$

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4 The median of 4, 8, 12, 16, 20, 24 is

- **A** 12
- **B** 16
- **C** 14
- **D** 20

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5 The range of $f(x) = x^2 + 6$ is

- A $y \leq 6$
- B $y \geq 6$
- C $y > 6$
- D $y \geq -6$

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6 If $f(x) = x^3 + 4x^2 - 3$, then $f(-1)$ is

- A 2
- B -2
- C 0
- D 6

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7 **The solution of $2^x = 64$ is**

- A 6
- B 8
- C 32
- D 5

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8 **In a normal distribution with mean 80 and standard deviation 5, about what percent of values lie within two standard deviations of the mean?**

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

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9 **The inverse of f(x) = 5x - 2 is**

A $f^{-1}(x) = \frac{x - 2}{5}$

B $f^{-1}(x) = \frac{x + 2}{5}$

C $f^{-1}(x) = 5x + 2$

D $f^{-1}(x) = \frac{x}{5} - 2$

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10 **The sum of the zeros of $x^2 - 6x + 8$ is**

A 8

B -6

C 2

D 6

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11 A sample of 80 grams has a half-life of 10 years. After 20 years, how many grams remain?

- **A** 40
- **B** 10
- **C** 60
- **D** 20

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12 Two fair dice are rolled. The probability that the sum is 7 is

- **A** $\frac{1}{6}$
- **B** $\frac{1}{12}$
- **C** $\frac{7}{36}$
- **D** $\frac{1}{3}$

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13 Let $f(x) = 3x$ for $x < 1$ and $f(x) = x^2 + 2$ for $x \geq 1$. The value of $f(-1) + f(2)$ is

A 9

B 1

C 6

D 3

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

A $y = 3$

B $y = 0$

C $y = 2$

D $y = 1$

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15 The solution of logbase2of x + logbase2of (x - 2) = 3 is

- A 4
- B -2
- C 2
- D 8

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16 The probability of exactly 1 head in 3 fair coin flips is

- A $\frac{1}{8}$
- B $\frac{1}{4}$
- C $\frac{3}{8}$
- D $\frac{1}{2}$

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17 **Which statement about the relation {(4, 1), (5, 2), (4, 3)} is true?**

- A It is a function because it has three pairs
- B It is a function because every output is different
- C It is not a function because 5 has two outputs
- D It is not a function because 4 has two outputs

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18 **The larger solution of $x^2 - 5x = 0$ is**

- A 0
- B -5
- C 5
- D 1

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19 The value of tan 45° is

- A 0
- B $\frac{1}{2}$
- C $\sqrt{3}$
- D 1

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20 A game pays 20 dollars with probability $\frac{1}{4}$ and 0 dollars otherwise. The expected value, in dollars, is

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

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21 **A linear function passes through (1, 4) and (4, 10). Its slope is**

- **A** 3
- **B** 2
- **C** $\frac{1}{2}$
- **D** 6

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22 **The value of i^{23} is**

- **A** i
- **B** -1
- **C** 1
- **D** -i

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23 **The value of cos π is**

A 0

B 1

C -1

D $\frac{1}{2}$

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24 **The standard deviation measures**

A the largest minus the smallest value

B the middle value of a data set

C the most common value

D how spread out values are around the mean

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25 **If $f(x) = x^2 - 5$, then the positive solution of $f(x) = 11$ is**

ANSWER _____

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26 **For $f(x) = 3x^4 - 2x + 1$, as x approaches negative infinity, f(x) approaches**

A negative infinity

B positive infinity

C 0

D 1

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27 **The graph below shows $y = 3 \sin x$ for $0 \le x \le 2\pi$. The amplitude of the graph is**

A 1

B 2

C 3

D 6

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28 **A scatter plot has correlation coefficient $r = 0.91$. This describes a**

A strong positive linear relationship

B weak positive linear relationship

C strong negative linear relationship

D no linear relationship

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29 The domain of $y = f(x)$ is $1 \leq x \leq 5$. The domain of $y = f(x - 3)$ is

- **A** $4 \leq x \leq 8$
- **B** $-2 \leq x \leq 2$
- **C** $1 \leq x \leq 5$
- **D** $-3 \leq x \leq 1$

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

ANSWER _____

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31 **The value of 4^3 is**

- A 12
- B 64
- C 16
- D 81

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32 **The mean of 2, 8, 14, 20, 26 is**

- A 14
- B 12
- C 16
- D 10

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33 The domain of $f(x) = \sqrt{x + 4}$ is

- A $x > -4$
- B $x \geq -4$
- C $x \leq -4$
- D all real numbers

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34 The smaller zero of $x^2 + 2x - 15$ is

- A 3
- B -3
- C 5
- D -5

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35 The solution of $3^x = 81$ is

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

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36 For the data 2, 6, 10, 14, 18, 22, the interquartile range is

- A 8
- B 12
- C 16
- D 20

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

- A -4
- B 0
- C 4
- D -2

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38 The vertical asymptote of $y = \frac{5}{2x - 6}$ is

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

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39 A sample of 120 grams has a half-life of 8 years. After 16 years, how many grams remain?

- **A** 60
- **B** 30
- **C** 15
- **D** 90

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40 The probability of rolling a prime number on a fair six-sided die is

- **A** $\frac{1}{2}$
- **B** $\frac{1}{6}$
- **C** $\frac{1}{3}$
- **D** $\frac{2}{3}$

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

- A 6
- B 10
- C 15
- D 30

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42 The product $(1 + i)(1 - i)$ is

- A 0
- B 2
- C 1
- D 2i

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43 The amplitude of $y = 4 \cos x$ is

- **A** 2
- **B** 4
- **C** 1
- **D** 8

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44 The probability of exactly 3 heads in 4 fair coin flips is

- **A** $\frac{1}{16}$
- **B** $\frac{1}{2}$
- **C** $\frac{3}{4}$
- **D** $\frac{1}{4}$

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45 **If f(x) = 4x - 3, then f(5) is**

A 17

B 18

C 15

D 20

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46 **For f(x) = -x⁵ + 2x, as x approaches positive infinity, f(x) approaches**

A positive infinity

B 0

C negative infinity

D 2

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47 If $\sin\theta = \frac{5}{13}$ and θ is in Quadrant I, then $\cos\theta$ is

A $\frac{12}{13}$

B $\frac{5}{12}$

C $\frac{13}{12}$

D $-\frac{12}{13}$

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48 A survey of every student in a school is an example of a

A random sample

B biased sample

C census

D experiment

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49 **Compared to the graph of y = f(x), the graph of y = -f(x) + 4 has been**

A reflected in the y-axis and shifted up 4 units

B reflected in the x-axis and shifted down 4 units

C reflected in the x-axis and shifted up 4 units

D shifted up 4 units only

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50 **The product of the zeros of $x^2 - 9x + 14$ is**

ANSWER _____

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ANSWER KEY

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

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