

Practice IAD - Form A

This is a practice exam for Sacramento State's Intermediate Algebra Diagnostic Exam (IAD). The IAD exam was created to help channel students who need a review of intermediate algebra into one of the algebra review courses offered by the Sacramento State Mathematics Department.

The IAD is a 45 question exam with a 60 minute time limit that covers a variety of topics from intermediate & elementary algebra. Depending on your next math course a score of 27 or 24 is considered a passing score. If you have questions regarding what score you need to advance to your next math course, visit the Sacramento State Mathematics Department webpage at www.csus.edu/math.

This exam is intended for students to evaluate themselves in preparing for the IAD. To take this exam give yourself a quiet place to sit. Make sure you have eaten and are well rested. Time yourself for one hour. On the IAD, you may only use scratch paper and are not allowed to write in the test booklet. Do not use a calculator. After the test, grade yourself with the key that is provided in the back of this booklet. Seek help on problems that you missed and didn't understand.

Math Course	Passing Score
Math 1	NA
Math 17	24
Math 107A	24
Math 24	27
Stat 1	27
Math 26a	27
Math 29	27
Math 30	NA

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35. a b c d
36. a b c d
37. a b c d
38. a b c d
39. a b c d
40. a b c d
41. a b c d
42. a b c d
43. a b c d
44. a b c d
45. a b c d

1. Simplify: $(64)^{2/3}$

- a) 1 b) 4 c) 8 d) 16

2. Simplify: $\frac{49 - 7x}{x^2 - 49}$

- a) $\frac{7}{x+7}$ b) $\frac{7}{x-7}$ c) $\frac{-7}{x+7}$ d) $\frac{-7}{x}$

3. Solve for x : $\frac{p}{x} + y = 3$

- a) $\frac{p}{3-y}$ b) $\frac{3-y}{p}$ c) $\frac{p+yx}{3}$ d) 0

4. What value does P need to have in order for $x^2 - 4x + P$ to be a perfect square?

- a) $P = -4$ b) $P = 4$ c) $P = 2$ d) $P = -2$

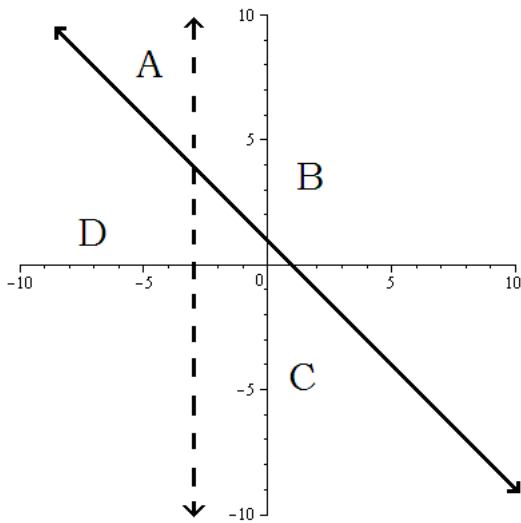
5. Factor completely: $2x(4w + 9) - 3y(4w + 9)$

- a) $(4w + 9)(2x - 3y)$ b) $8xw + 18x - 12yw + 27y$
c) $8xw + 11x - 12yw - 27y$ d) $(2x + 3y)(4w + 9)$

6. Write 0.00009487 in scientific notation.

- a) 0.9487×10^{-4} b) 9.487×10^5 c) 9.487×10^{-5} d) 948.7×10^7

7. Which region represents the solutions to the system of equations: $\begin{cases} x > -3 \\ y \leq -x + 1 \end{cases}$



- a) *A* b) *B* c) *C* d) *D*

8. Simplify and write with positive exponents: $(5c^{-3}d^2)^3(7c^{-3}d^8)^0$

- a) $\frac{35}{c^{12}d^2}$ b) $\frac{125d^6}{c^9}$ c) $\frac{125}{7c^9d^6}$ d) 0

9. Solve this equation for x : $|2x + 1| + 1 \leq 5$

- a) $x \leq \frac{3}{2}$ b) $x \leq \frac{3}{2}$ and $x \geq \frac{-7}{2}$ c) $x \leq \frac{3}{2}$ and $x \geq \frac{-5}{2}$ d) No Solution

10. Simplify: $\sqrt{50} + \sqrt{20}$

- a) 10 b) $10\sqrt{10}$ c) $5\sqrt{2} + 2\sqrt{5}$ d) Cannot be simplified

11. Add and express as one fraction: $2x^{-1} + 3x$

a) $\frac{2 + 3x^2}{x}$

b) $\frac{1 + 6x^2}{2x}$

c) $\frac{3}{2}$

d) 5

12. At which values of x is this rational expression undefined? $\frac{x^2 + 4x + 4}{x^2 - 1}$

a) $-1, 1$

b) $-2, -1, 1$

c) 0

d) 1

13. Solve for x : $x^2 + 4x + 1 = 0$

a) $x = 2 \pm 2\sqrt{3}$

b) $x = -2 \pm \sqrt{3}$

c) $x = \frac{-4 \pm \sqrt{22}}{2}$

d) $x = \frac{4 \pm \sqrt{22}}{2}$

14. Evaluate $a - b^2 - c$ when $a = 1$, $b = -1$, and $c = -1$.

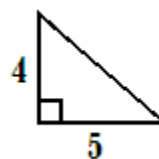
a) 3

b) -1

c) -3

d) 1

15. Find the exact length of the hypotenuse of this right triangle:



a) 3

b) 9

c) $\sqrt{41}$

d) $2\sqrt{5}$

16. Find the midpoint of the line segment whose endpoints are $(-3, 2)$ and $(-7, -8)$.

- a) $(2, 5)$ b) $\left(\frac{-1}{2}, \frac{-15}{2}\right)$ c) $(-2, 15)$ d) $(-5, -3)$

17. Simplify: $4^{-1} + 4^{-2}$

- a) $\frac{5}{16}$ b) $\frac{1}{4^3}$ c) $\frac{1}{16^3}$ d) -12

18. Solve the following inequality for x : $5 - 3x > 3 - 2x$

- a) $x > 2$ b) $x < 2$ c) $x > -2$ d) $x < \frac{8}{5}$

19. Simplify: $\sqrt[5]{32x^6y^2w^{10}}$

- a) $2xw^2\sqrt[5]{xy^2}$ b) $2xy^{-3}x^5$ c) $6\sqrt[5]{7xy^2w^2}$ d) $2xw\sqrt[5]{xy^2}$

20. Simplify as much as possible: $\frac{\left(\frac{2}{x}\right)}{\left(\frac{2}{x} + \frac{x}{2}\right)}$

- a) $\frac{4}{x^2 + 4}$ b) $\frac{2}{x}$ c) $\frac{x}{2}$ d) $\frac{1}{x^2}$

21. Solve for x : $x^5 \cdot x^{-3} = 13x$

- a) 169 b) -13 c) 26 d) 13

22. Simplify: i^{51}

- a) 0 b) $-i$ c) 1 d) -1

23. Factor completely: $3p^2 - 4p - 4$

- a) $(3p + 4)(p - 1)$ b) $(3p - 2)(p + 2)$ c) $(3p + 1)(p - 4)$ d) $(3p + 2)(p - 2)$

24. Find $f(a - 2)$ when $f(x) = 5 - x$.

- a) $3 - a$ b) $7 - a$ c) $-7 + x$ d) $x - 3$

25. Solve this system of equations: $\begin{cases} 4y + 3x = 0 \\ y + x = 1 \end{cases}$

- a) $(-4, 3)$ b) $(4, -3)$ c) $(3, -4)$ d) No Solution

26. Simplify as much as possible and express with positive exponents: $\frac{(3x)^2}{(-3x)^3}$

- a) $\frac{9x^2}{27x^3}$ b) $\frac{-1}{x}$ c) $\frac{-1}{3x}$ d) $\frac{1}{3x}$

27. Write $x^y = z$ in logarithmic form.

- a) $\log_z(y) = x$ b) $\log_x(z) = y$ c) $\log_x(y) = z$ d) $\log(x^y) = z$

28. Rationalize: $\frac{\sqrt{2} + \sqrt{5}}{\sqrt{2} - \sqrt{5}}$

a) $-\frac{7 + 2\sqrt{10}}{3}$

b) $-7 + 2\sqrt{10}$

c) $-10 - 2\sqrt{10}$

d) $-\frac{3 + 2\sqrt{10}}{3}$

29. Add and simplify: $\frac{5y}{y-5} - \frac{y-2}{y+2}$

a) $\frac{4y^2 + 17y - 10}{(y-5)(y+2)}$

b) $\frac{6y-5}{y-5}$

c) $\frac{4y+2}{2y-3}$

d) $\frac{4y^2 + 17y + 10}{(y-5)(y+2)}$

30. Solve for M : $2K - \frac{1}{2} = \frac{3}{M}$

a) $\frac{6}{4K-1}$

b) $\frac{2K-1}{3}$

c) $\frac{4K-1}{6}$

d) $4K-7$

31. Rationalize and simplify: $\frac{5i-2i}{1-2i}$

a) $\frac{4}{3} + \frac{5}{3}i$

b) $-\frac{6}{5} + \frac{3}{5}i$

c) $\frac{9}{5} - \frac{12}{5}i$

d) $6-3i$

32. Multiply and simplify: $(a-b)(a+b) + (a+b)^2$

a) 0

b) $2a^2$

c) $2a^2 + 2b^2$

d) $2a^2 + 2ab$

33. Find the quotient of $\frac{1.8 \times 10^{-3}}{6.0 \times 10^{-15}}$ and write your answer in scientific notation.

a) 3.0×10^{11}

b) 3.0×10^{-18}

c) 0.3×10^{11}

d) -3.0×10^{12}

34. Find the slope of the line whose equation is $3x - 5y = 45$.

- a) -9 b) $-\frac{3}{5}$ c) 15 d) $\frac{3}{5}$

35. Simplify: $\left(\frac{-4x^7y^{-3}}{-3x^{-3}y^{-3}}\right)^2$

- a) $\frac{16x^{20}}{9}$ b) $\frac{-16x^8y^{12}}{9}$ c) $\frac{16x^8}{9}$ d) $\frac{16x^8y^2}{9}$

36. Expand as much as possible using the properties of logarithms: $\log_5(17mk)$

- a) $\log_5(17) \cdot \log_5(m) \cdot \log_5(k)$ b) $\log_5(17) + (\log_5(m) \cdot \log_5(k))$
c) $\log_5 17 + \log_5 m + \log_5 k$ d) $\log_5 m - \log_5 17 + \log_5 k$

37. Express with rational exponents and simplify: $\sqrt[3]{\sqrt[4]{x^{10}}}$

- a) x^3 b) $x^{10/7}$ c) $x^{5/6}$ d) $\sqrt[17]{x}$

38. Divide and simplify: $\frac{x^2 - 1}{x^2 - 2x - 3} \div \frac{x^2 + 2x - 3}{x^2 - 9}$

- a) 1 b) $\frac{x^2 - 2x + 1}{x^2 - 6x + 9}$ c) $\frac{x - 1}{x - 3}$ d) $\frac{x + 1}{x - 3}$

39. Solve for x : $\frac{1}{6} + \frac{5}{x} = \frac{1}{3}$

- a) $x = 30$ b) $x = -30$ c) $x = \frac{30}{3}$ d) $x = 5$

40. $x^2 = -36$. What is the real number value of x ?

- a) -6 b) 6 c) ± 18 d) None of the above

41. Factor completely in the real number system: $x^4 - 1$

- a) $(x^2 + 1)(x^2 - 1)$ b) $(x^2 + 1)(x - 1)(x + 1)$ c) $(x^2 - 1)(x^2 - 1)$ d) Prime

42. Fred's midterm exam percent grades are 68, 76, and 81. What score does Fred need to get on the fourth midterm exam to have an average exam score of 80%?

- a) 15% b) 22.5% c) 32% d) 95%

43. Find the distance between $(2, 7)$ and $(-7, 19)$.

- a) 15 b) $\sqrt{145}$ c) $5\sqrt{29}$ d) 17

44. Simplify: $(-5^2)^3$

- a) 5^5 b) -5^8 c) -5^6 d) 5^6

45. Solve for M : $3 \log(M) = 3$

- a) $M = 3$ b) $M = 1$ c) $M = 10$ d) $M = 1000$

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