OU MATHDAY 2001
ALGEBRA 1 TEST

CHOICE E - n.o.t.a. = none of the above

1. A line joins the points (-2,4) and (- 1, 1). The coordinates of the point where the line intersects the x-axis are:

   A. (0,-2);   **B.** (-2,0);   **C.** (-3/2,0);   **D.** (-2/3,0);   **E.** n.o.t.a.

2. When the repeating decimal 0.4848 ... is written in simplest fractional form, what is the sum of the numerator and denominator?

   A. 32;   **B.** 49;   **C.** 137;   **D.** 148;   **E.** n.o.t.a.

3. Given $g(x) = 3x + 4$, find $g(a + b)$

   A. $3a + b + 4$;   **B.** $3a + 3b + 12$;   **C.** $3a + 3b + 4$;   **D.** $3a + b + 12$;

   E. n.o.t.a.

4. If $8x = 5y$ then $x/y = ?$

   A. 8/5;   **B.** 5/8;   **C.** 1/40;   **D.** 40;   **E.** n.o.t.a

5. Factor $x^3 - 2x^2 + x - 2$

   A. $(x^2 - 2)(x + 1)$;   **B.** $(x - 1)(x^2 + 2)$;   **C.** $(x^2 - x + 2)(x - 1)$;

   D. $(x^2 + x - 2)(x + 1)$;   **E.** n.o.t.a.

6. Simplify: $16^{-3/4}$

   A. 1/12;   **B.** - 12;   **C.** 1/8;   **D.** -8;   **E.** n.o.t.a.

7. Give the missing term of the Fibonacci sequence 1,1,2,3,5,8,13,__,34

   A. 20;   **B.** 21;   **C.** 22;   **D.** 23;   **E.** n.o.t.a.

8. The total number of integral factors of 1992 is

   A. 3;   **B.** 4;   **C.** 8;   **D.** 16;   **E.** n.o.t.a.

9. The sum of two numbers is 5/4. One number is 1/2 of the other. Find the product of these two numbers.

   A. 25/72;   **B.** 25/63;   **C.** 5/8;   **D.** 5/6;   **E.** n. o. t. a.

10. Which of the following does not express y as a function of x?

A. $y = |x - 3|$;   **B.** $y = -3$;   **C.** $x = y$;   **D.** $x = y^2 + 4$;   **E.** n.o.t.a.

11. Factor $8x^3 - 27$

A. $(2x - 3)(4x^2 - 12x + 9)$;   **B.** $(2x - 3)$;   **C.** $(2x - 3)(4x^2 - 6x + 9)$;

D. $(2x + 3)(4x^2 + 12x + 9)$;   **E.** n.o.t.a.

12. When Simplified $(-1/125)^{-2/3}$ becomes:

A. $1/25$;   **B.** -1/25;   **C.** 25;   **D.** -25;   **E.** n.o.t.a.

13. If $3x^3 - 9x^2 + kx - 12$ is divisible by $x - 3$, then it is also divisible by:

A. $3x^2 - x + 4$;   **B.** $3x^2 - 4$;   **C.** $3x^2 + 4$;   **D.** Insufficient Information;
E. n.o.t.a.

14. Write an expression for the number of inches in the perimeter of a rectangle with a length in feet that is 4 feet longer than the width(x) in feet.

A. $4x + 8$;   **B.** $(2x + 3)$;   **C.** $32x$;   **D.** $48x + 96$;   **E.** n.o.t.a.

15. When $x^9 - x$ is factored as completely as possible into polynomials and monomials with real integral coefficients, the number of factors is:

A. 2;   **B.** 3;   **C.** 4;   **D.** 5;   **E.** n.o.t.a.

16. Let $n = x - y^{(x-y)}$. Find n when $x = 2$ and $y = -2$.

A. - 14;   **B.** 0;   **C.** 1;   **D.** 18;   **E.** n.o.t.a.

17. Find the remainder when $3x^5 - 5x^3 + 1$ is divided by $x - 2$.

A. 3;   **B.** 23;   **C.** 29;   **D.** 57;   **E.** n.o.t.a.

18. Solve for h if $SA = 2\pi r(r + h)$.

A. $h = SA - 2\pi r$;   **B.** $h = SA/(2\pi r),\ r \neq 0$;

C. $h = [SA/(2\pi r)] - r,\ r \neq 0$;   **D.** $h = [SA/(2\pi r)] + r,\ r \neq 0$;   **E.** n.o.t.a.

19. A 60 L solution is 60% acid. How may liters of water must be added to produce a solution that is 45% acid?

A. 18;   **B.** 20;   **C.** 24;   **D.** 32;   **E.** n.o.t.a.

20. The units' digit of a two digit number is twice the tens' digit. If the digits of the number were reversed the resulting number would be six less than twice the original number. Find the original number.

   A. 12;   **B.** 24;   **C.** 36;   **D.** 48;   **E.** n.o.t.a.

21. What is the Least Common Multiple of $51x^2z^3$ and $34xz^5$?

   A. $17xz^3$;   **B.** $102x^2z^3$;   **C.** $102x^2z^{15}$;   **D.** $1734x^2z^5$;   **E.** n.o.t.a.

22. What is the value of x if one minus the reciprocal of $(1-x)$ equals the reciprocal of $(1-x)$?

   A. 1/2;   **B.** -1;   **C.** -2;   **D.** 2;   **E.** n.o.t.a.

23. The degree of $(x^2+1)^4(x^3+1)^3$ as a polynomial in x is

   A. 5;   **B.** 7;   **C.** 12;   **D.** 17;   **E.** n.o.t.a.

24. The points (6,12) and (0,-6) are connected by a straight line. Another point on this line is:

   A. $(3,3)$;   **B.** $(2,1)$;   **C.** $(7,16)$;   **D.** $(-1,-4)$;   **E.** n.o.t.a.

25. If Frank Caballero gently roles two fair six-sided dice, what is the probability that the sum of the numbers shown is a multiple of five?

   A. 1/18;   **B.** 1/9;   **C.** 1/6;   **D.** 7/36;   **E.** n.o.t.a.

ALGEBRA I
TIE BREAKERS

1. Thom Morris goes up a hill at a rate of 40 miles per hour and comes down the hill at a rate of 60 miles per hour. What is the average rate for the total trip?

A. 45 mph;   **B.** 46 mph;   **C.** 48 mph;   **D.** 50 mph;   **E.** n.o.t.a.

ALGEBRA I
TIE BREAKERS

2. If $x + y = 7$ and $x^2 - y^2 = 21$ then $2x + 3y =$

    A. -3; **B.** 3; **C.** 16; **D.** 28; **E.** n.o.t.a.

ALGEBRA I
TIE BREAKERS

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3. The sum of the squares two numbers is 34. The square of their sum is 64. Find the product of the two numbers.

ALGEBRA I
TIE BREAKERS

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4. Solve for x:

$$4^{2x+1}\left(\frac{1}{2}\right)^{2x} = 8.$$