

Math 100

Final Exam Name _____

Section _____ Date _____

1. Simplify $-6(2r+8) - 4(-5-2r) + 7(2r+3)$

1. _____
2 points

2. Simplify $\frac{6+3^2+12 \div (3-9)}{2(6+9)+3^0-9 \div (-3)}$

2. _____
3 points

3. From the following set, list the integers. $\{-\sqrt{49}, -\frac{6}{2}, -\frac{1}{5}, 0, 2\sqrt{3}\}$

3. _____
3 points

4. Solve for z.

$$5z+2-6(z+7)=-[2-(5z+10)]$$

4. _____
3 points

5. How many gallons of a 9% salt solution must be mixed with 8 gallons of a 15% salt solution to obtain a 12% salt solution?

5. _____
3 points

6. Solve the linear inequality. State your answer graphically and in interval notation.

$$\frac{3y-8}{-5} \geq y+3$$

2 points



6. _____
2 points

7. Given the points $(3, -2)$ and $(2, -7)$ find:

a. the midpoint of these two points

a. _____
2 points

b. the slope of the line passing through these two points. b. _____
2 points

c. the equation of the line through these points in slope intercept form.

c. _____
3 points

8. Find the equation of the line parallel to $4x - 3y = 2$ and through the point $(-2, 7)$, put your answer in $Ax + By = C$ form.

8. _____
3 points

9. Let $f(x) = x^2 - 3x + 2$, find $f(-4)$.

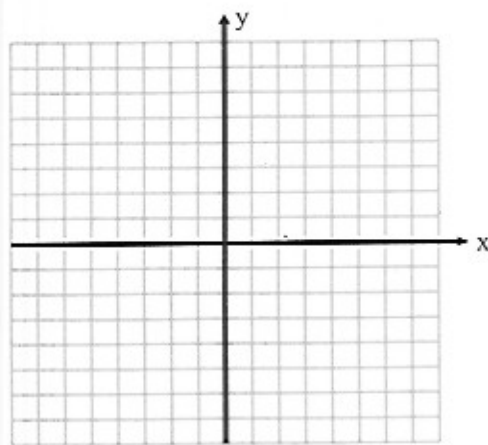
9. _____
2 points

10. Find the domain of the function $f(x) = \frac{8x}{4x-5}$.

Express in **Interval Form**.

10. _____
2 points

11. Graph: $6x + 13 > 2y + 5$



3 points

12. Solve the system of equations. Give solution in the form (x, y) .

$$\begin{cases} -3x + 4y = 21 \\ 2x - 5y = -7 \end{cases}$$

12. _____
3 points

13. Simplify the following.

a. -8^0

a. _____
1 point

b. 3^{-2}

b. _____
1 point

c. $3^{-1} + 2^{-2}$

c. _____
1 point

d. $(3+7)^{-1}$

d. _____
1 point

e. $(-2)^{-3}$

e. _____
1 point

14. Simplify. Write the answer with only positive exponents.

$$\left(\frac{x^3yz^{-1}}{x^2y^4z}\right)^{-2}$$

14. _____
3 points

15. Perform the indicated operation.

$$(5a^3 - 4a + 8) - (7a^3 + a^2 - 3)$$

15. _____
2 points

16. Perform the indicated operation.

$$(2x - y)^2$$

16. _____
2 points

17. Divide. $\frac{12x^4 + 8x^3 - 6x^2}{2x^3}$

17. _____
3 points

18. Divide. $\frac{x^3 - 2x^2 + 5x - 3}{x - 1}$

18. _____

3 points

19. Factor completely.

a. $2x^2 - 7x - 4$

a. _____

2 points

b. $20a^2 - 5b^2$

b. _____

2 points

c. $3mk + 12m + pk + 4p$

c. _____

2 points

20. Solve the equation. $6x^2 = 2x$

20. _____

3 points

21. Perform the operations and simplify.

$$\frac{z^2 - 3z - 10}{z - 4} \div \frac{z^2 + 5z + 6}{z^2 - 4z}$$

21. _____

3 points

22. Perform the operations and simplify.

$$\frac{3x+1}{x+4} - \frac{2}{x} + \frac{8}{x^2+4x}$$

22. _____

3 points

23. Simplify the complex fraction.

$$\frac{\frac{x^2 - 25y^2}{xy}}{\frac{1}{y} - \frac{5}{x}}$$

23. _____

3 points

24. Solve.

$$\frac{5}{6m+3} = \frac{32}{3} - \frac{9}{2m+1}$$

24. _____

3 points

25. Use the rules of exponents to simplify the expression.
Write your solution with only **positive exponents**.
Assume all variables represent positive real numbers.

$$\frac{b^{-\frac{1}{4}} b^{\frac{5}{12}}}{b^{\frac{11}{12}}}$$

25. _____

2 points

26. Evaluate.

$$\left(\frac{27}{8}\right)^{\frac{2}{3}}$$

26. _____

2 points

27. Express each radical in simplest form. Assume all Variables represent positive real numbers.

a. $\sqrt{45x^6y^5}$

a. _____

2 points

b. $\sqrt{\frac{50x^7y^3}{2x^3y}}$

b. _____

2 points

28. Perform the indicated operations. Assume all variables represent positive real numbers.

a. $4\sqrt{32} - 2\sqrt{8}$

a. _____

3 points

b. $(2\sqrt{5} + \sqrt{3})(3\sqrt{5} - 2\sqrt{3})$

b. _____

3 points

29. Solve.

$$\sqrt{11-x} = x+1$$

29. _____

3 points

30. Rationalize the denominator. Assume all variables represent positive real numbers.

a. $\frac{7}{\sqrt[3]{3y^2}}$

a. _____
2 points

b. $\frac{1}{4-\sqrt{15}}$

b. _____
2 points

31. Use the square root property to solve the equation.

$$2n^2 - 32 = 0$$

31. _____
2 points

Notice

As stated in the University of Southern Indiana Bulletin, a "C" or better in Math 100 is required as a prerequisite to subsequent courses in mathematics. If you are currently pre-registered for Math 104, Math 106, Math 108, Math 111, Math 112, or Math 118 and do not receive a course grade of "C" or better, you must withdraw from that class and re-enroll in Math 100. If you have attempted Math 100 twice without earning a grade of C or better, then you must enroll in the expanded offering of Math 100/101 for fall.

For assistance with schedule adjustment, please contact the Office of the Registrar at (812) 464-1762