

Advanced Algebra 2 Final Exam Review # 3

Name _____

Show all work:

1. Fred bought 3 burritos and 4 tacos for \$11.33.
Barney bought 9 burritos and 5 tacos for \$23.56.
How much was one taco?

7. Simplify: $\left(\frac{6+3i}{2-i}\right)$

8. Simplify: $3(-25+i) - (22-4i)$

9. Simplify: $\frac{x-5}{x-4} + \frac{3}{x^2-x-12}$

2. Solve for x: $3(x)^{\frac{-3}{2}} = 375$
($\frac{-3}{2}$ is an exponent.)

3. Write a single logarithm that is equivalent to: $\log_5 18 + \log_5 2 - \log_5 6$

10. Simplify: $\left(\frac{x^3 y^4}{4z^2}\right)^{-1} \left(\frac{5x^{-1}}{15y^3 z^3}\right)^2$

4. If $\sqrt{-1} = i$, what is the value of i^{42} ?

5. Suppose \$5000 is invested is invested at 2.5% interest, compounded monthly. How much is the investment worth after 7 years?

11. Factor: $27y^3 z^3 - 343$

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12. What are all the roots of $3x^3 - 27x = 0$?

16. Solve the rational equation:

$$\frac{x+1}{x-1} = \frac{x}{3} + \frac{2}{x-1}$$

13. Simplify:

$$\frac{3x-2}{2x^2+6x} \div \frac{x+3}{x^2+6x+9} \cdot \frac{4x+12}{6x-4}$$

17. Find the domain of the radical function:

$$f(x) = \sqrt{3-4x}$$

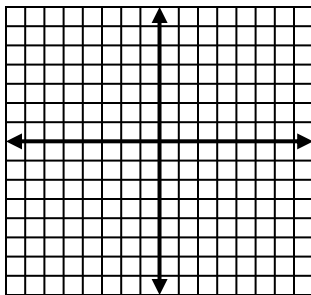
14. Simplify the rational expression:

$$\frac{4x^2}{3y} + \frac{3y}{4x^2}$$

18. Find the solutions to the equation:

$$\sqrt{3x-2} = x-2$$

15. Graph a function that has an inverse that is also a function.



19. What is the solution to the equation:

$$\log_4 \frac{1}{64} = x$$

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20. What is the solution to : $\left(\frac{1}{3}\right)^x = 3^{x+8}$

24. Lucy buys a scooter value at \$5,600. If it depreciates 12% annually, what is its value after 4 years?

21. Bacteria in a culture are growing exponentially with time, as shown in the given table. What is the equation that expresses the number of bacteria, y , present at any time, t ?

Day	Bacteria
0	300
1	900
2	2700

22. Which conic is represented by:

a) $3x^2 - y^2 - 3x + 2y + 1 = 0$

b) $2x^2 - 2(y + 1) = 8$

c) $4x - x^2 = y^2 + 2y - 3$

d) $6x^2 - 12x + 2y^2 - 4y + 5 = 0$

23. Find the center of the ellipse:

$$3x^2 - 12x + y^2 + 6y + 3 = 0$$