_____ / 55 total points

Test #1 Name: _____

Math 71B, Prof. Beydler Thursday, March 27, 2014

Directions: Show all work. No books or notes. A **scientific calculator** is allowed. Your desk and lap must be clear (no phones, notebooks, etc.). Please box your answers. Good luck!

1. (1 point) Suppose $f(x) = \sqrt[5]{x^3 + 24}$. Find $f(2)$.

2. (2 points) Find the domain of $f(x) = \sqrt{8 - 4x}$. Write your answer using either set-builder notation or interval notation.

3. (2 points) Simplify. Assume x can represent any real number.
$\sqrt[4]{81x^{12}}$

4. (2 points) Rewrite with a positive rational exponent. Then simplify.
$(-27x)^{-\frac{2}{3}}$

5. (3 points) Simplify. Leave your answer using rational exponents. Assume all variables are positive real numbers.
$\left(-2x^{-\frac{1}{3}}y^{\frac{3}{4}}\right)^4$

6. (2 points) Simplify. Write your answer in radical notation.

$\sqrt{\sqrt[4]{x}}$

7. (2 points) Simplify. Assume all variables are positive real numbers.

$\sqrt[3]{32x^5y^4z^6}$

8. (2 points) Subtract.

$4\sqrt[3]{10} - \sqrt[3]{270}$

9. (3 points) Simplify (assume all variables represent positive numbers).

$\frac{\sqrt[3]{25x^8y^5}}{\sqrt[3]{5x^2}}$

10. (2 points) Multiply and simplify.

$\left(\sqrt{3}+4\sqrt{2}\right)(\sqrt{3}-5\sqrt{2})$

11. (4 points) Rationalize the denominator. Simplify. Assume all variables are positive real numbers.

$\frac{4xy}{\sqrt{12x^3y}}$

12. (3 points) Rationalize the denominator. Simplify.

$\frac{-2}{\sqrt{3}-\sqrt{5}}$

13. (4 points) Solve the radical equation.
$\sqrt{x+2}+4=x$

14. (4 points) Solve: $\sqrt{x+5}-\sqrt{x-3}=2$

15. (2 points) Perform the indicated operation. Write the result in $a+bi$ form.
$-2i(-3+2i)$

16. (2 points) Perform the indicated operation and simplify.
$\sqrt{-2} \cdot \sqrt{-18}$

17. (3 points) Write in $a + bi$ form.
$\frac{2+i}{3-2i}$

18. (2 points) Simplify.
i^{49}

19. (3 points) Solve equation by the square root property. If possible, simplify any radicals.
$3(x-5)^2 - 4 = 20$

20. (4 points) Solve the quadratic equation by <u>completing the square</u>.
$2x^2 + 16x - 10 = 0$

21. (3 points) A rectangular park is 6 miles long and 3 miles wide. How long is a pedestrian route that runs diagonally across the park? (Write your answer in simplified radical form, and be sure to include units in your answer.)

22. (0 points) How many hours of sleep did you get last night? _____

Note: Be sure to double check your work. And don't forget to turn in your homework! ☺