

_____ / 50 total points

Test #3

Name: _____

Math 51, Section 27, Prof. Beydler

Wednesday, November 19, 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. (3 points) Solve: $(x - 2)(x + 3) = 6$

2. (4 points) The longer leg of a right triangle is 1 m longer than the shorter leg. The hypotenuse is 1 m shorter than twice the shorter leg. Find the length of the shorter leg of the triangle.

3. (1 point) Find any value(s) of the variable for which each rational expression is undefined.

$$\frac{3x+7}{2x-5}$$

4. (3 points) Write the following rational expression in lowest terms.

$$\frac{2x^3+7x^2-30x}{2x^3-11x^2+15x}$$

5. (3 points) Multiply. Write your answer in lowest terms.

$$\frac{x^2+3x}{x^2-3x-4} \cdot \frac{x^2-5x+4}{x^2+2x-3}$$

6. (2 points) Divide. Write the answer in lowest terms.

$$\frac{(x-3)^2}{6x} \div \frac{x-3}{x^2}$$

7. (2 points) Find the LCD of $\frac{6}{5x}$ and $\frac{4}{x^2-3x}$.

8. (2 points) Add. Write each answer in lowest terms.

$$\frac{3}{4p-5} + \frac{9}{5-4p}$$

9. (4 points) Subtract. Write each answer in lowest terms.

$$\frac{8}{z^2+6z} - \frac{3}{z^2+4z-12}$$

10. (4 points) Simplify.

$$\frac{2 + \frac{1}{x} - \frac{28}{x^2}}{3 + \frac{13}{x} + \frac{4}{x^2}}$$

11. (4 points) Solve the following equation.

$$\frac{3x-1}{x-2} = \frac{5}{x-2} + 1$$

12. (4 points) Working with your cousin, you can refinish a table in 3 hours. Working alone, your cousin can complete the job in 4 hours. How long would it take you to refinish the table working alone?

13. (3 points) The distance a body falls from rest varies directly as the square of the time it falls (ignoring air resistance). If a sky diver falls 64 ft in 2 sec, how far will she fall in 8 sec?

14. (2 points) Find the distance between $(3, -5)$ and $(-2, 8)$.

15. Evaluate.

a) (1 point) $\sqrt{-64}$

b) (1 point) $\sqrt[3]{\frac{-8}{125}}$

c) (1 point) $-\sqrt[4]{10,000}$

16. (2 points) Factor completely (if not factorable over the integers, write prime).
 $8x^3 - 125y^6$

17. (2 points) Factor completely (if not factorable over the integers, write prime).
 $100x^2 + 49$

18. (2 points) Factor completely (if not factorable over the integers, write prime).
 $49y^2 - 25w^2$

Q: What is the tallest building at Mt. SAC?

A: The library. (It has the most stories.)

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