Math 19000-1XB Exam 1 Summer 2022

Name: _____ 6/23/2022

Answer each question in the space provided and write your final answer to each question on the answer line. Simplify all fractions and radical expressions. If you need more room, you can continue your work on the back of the page. Good luck!

1. (5 points) Express the inequality $x \geq -3$ in interval notation.

1. _____

2. (5 points) Evaluate the expression numerically.

$$\frac{\frac{2}{5} + \frac{1}{2}}{\frac{1}{10} + \frac{3}{15}}$$

2. _____

3. (5 points) Simplify the expression and eliminate any negative exponents.

$$\left(\frac{2x^3y^{-4}}{3y^{-1}z^{-5}}\right)^{-2}$$

3. _____

4. (5 points) Evaluate the expression numerically.

$$\left(\sqrt[4]{6}\right)^{-8} + \frac{\sqrt{75}}{\sqrt{3}}$$

4. _____

5. (5 points) Simplify the expression.

$$x^{5/2}(\sqrt{x} - \frac{1}{\sqrt{x}})$$

5. _____

6. (5 points) Simplify the expression.

$$\left(w - \frac{1}{w}\right)^{-2}$$

6. _____

7. (5 points) Perform the indicated operations and simplify.

$$2(x-1)(3x+3)-3x(2x-1)$$

7. _____

8. (5 points) Perform the indicated operations and simplify.

$$\left(t-\frac{3}{t}\right)^2$$

8. _____

9. (5 points) Factor completely.

$$3(t+6)^2+6t(t+6)$$

9. _____

10. (5 points) Factor the expression completely.

$$x^4 + 5x^3 - 24x^2$$

10. _____

11. (5 points) Factor the expression completely.

$$16x^2 - 25$$

11. _____

12. (5 points) Perform the indicated operation and simplfy.

$$\frac{10x - 2}{x + 2} - 2$$

12. _____

13. (5 points) Perform the indicated operation and simplify.

$$\frac{x^2+4x+4}{x^2-2x+1} \cdot \frac{x^2-6x+5}{x^2-3x-10}$$

13. _____

14. (5 points) Solve the equation.

$$\frac{18x-5}{9x+3} = 2 - \frac{3}{x}$$

14. _____

15. (5 points) Solve the equation.

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

15. _____

16. (5 points) Solve the equation.

$$\frac{4}{5}w + \frac{1}{4}(w-5) = \frac{w+1}{2}$$

16. _____

17. (5 points) Find the distance between the points $(-3, 3)$ and $(1, -5)$.

17. _____

18. (5 points) Find the midpoint of the line segment connecting $(2, 1)$ and $(9, -3)$.

18. _____

19. (5 points) Determine which of the given points are on the graph of the equation.

$$\sqrt{y} = (x-5)^2; \qquad (8,3), (0,25), (4,1), (2,81)$$

19. _____

20. (5 points) Give an equation of the circle with center $(3, -4)$ that passes through the origin.

20. _____