## Answer each question neatly on the line provided.

Name:

ID: \_\_\_\_\_

1. (5 points) Perform the indicated operations  $\left(6 + \frac{1}{3}\right) \left(\frac{1}{2} - \frac{3}{4}\right)$  and simplify completely as one fraction.

1. \_\_\_\_\_

2. (5 points) True or False:  $\frac{9}{40} \ge \frac{4}{9}$ .

2. \_\_\_\_\_

3. (5 points) Evaluate  $(\frac{2}{5})^{-3}$  and simplify completely without negative exponents.

3

4. (5 points) Factor  $2x^2 - 2x - 24$  completely.

1. \_\_\_\_\_

5. (5 points) Perform the operations  $x^{\frac{3}{2}} \left( 10\sqrt{x} + \frac{2}{\sqrt{x}} \right)$  and simplify.

ó. \_\_\_\_\_

6. (5 points) Expand  $(\sqrt{u} + \frac{1}{\sqrt{u}})^2$  and simplify completely.

6. \_\_\_\_\_

7. (5 points) Find the domain  $\frac{\sqrt{x-4}}{x^2-25}$ .

- 7. \_\_\_\_\_
- 8. (5 points) Simplify  $(-7z^5)^2(3z^3)$  and eliminate any negative exponents.
- 8. \_\_\_\_\_
- 9. (5 points) Perform the operation  $\frac{x^2+2x-15}{x^2-2x-15} \cdot \frac{5-x}{x+5}$  and simplify completely.
- 9. \_\_\_\_\_
- 10. (5 points) Add  $\frac{3x}{x^2-16} + \frac{1}{x-4}$  and then simplify as one reduced fraction.
- 10.

11. (5 points) Solve  $4x^2 - 156 = 0$ .

11. \_\_\_\_\_

12. (5 points) Find all real solutions x to  $\sqrt{4x-2}=2$ .

12. \_\_\_\_\_

13. (5 points) Solve |3x + 4| = 1.

- 13. \_\_\_\_\_
- 14. (5 points) Solve  $\frac{4}{x} < x$ . Express your answer in interval notation.

14. \_\_\_\_\_

15. (5 points) Sketch the graph of the piecewise defined function

$$f(x) = \begin{cases} 3x & \text{if } x < 0 \\ x^2 & \text{if } x \ge 0 \end{cases}$$

16. (5 points) Find an equation of the line passing through the points (-1,2) and parallel to the x-axis.

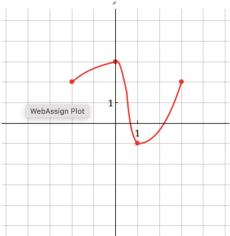
16. \_\_\_\_\_

17. (5 points) Find an equation of the circle with center at the origin that passes through (4,7).

17. \_\_\_\_\_

18. (5 points) Find the net change of  $f(x) = \frac{1}{x}$  between x = -1 and x = -1 + h.

18. \_\_\_\_\_



19. (5 points) Use the graph of f between x = 0 and x = 3.

to find its average rate of change

19. \_\_\_\_\_

20. (5 points) Make a rough sketch of the graph  $y = \frac{x}{|x|}$ .