Sections 1.1-2.4 195 midterm 1 No Electronics

Answer each question neatly on the line provided.

Name: _____ ID: _____

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

1. _____

2. (5 points) Simplify $\left(\frac{a^4}{2ab^2}\right)^{-3}$ completely and eliminate negative exponents.

2. _____

3. (5 points) Evaluate $32^{-\frac{2}{5}}$ and simplify completely without negative exponents.

3. _____

4. (5 points) Factor x^2-2x-3 completely.

4. _____

5. (5 points) Perform the operations $2(2x+3)-(x^2-5x+4)$ and simplify completely. Your final answer should not contain parenthesis.

5. _____

6. (5 points) Expand $(3x-5)^2$ and simplify completely. Your final answer should not contain parenthesis.

6. _____

7. (5 points) Factor $3x^3 - 27x$ completely.

7. _____

8. (5 points) Simplify $\frac{x^2-1}{x^2+x-2}$ completely.

8. _____

9. (5 points) Perform the division $\frac{x^2+2x-15}{x^2-25} \div \frac{x+2}{x+5}$ and simplify completely.

9. _____

10. (5 points) Subtract $\frac{x}{x-4} - \frac{3}{x+6}$ and then simplify as one reduced fraction.

10. _____

11. (5 points) Solve $2(1-x) = 3(1+2x) + 5$ for x.

11. _____

12. (5 points) Find all real solutions x to $x^2 = x + 12$.

12. _____

13. (5 points) Solve $V = \frac{1}{3}\pi r^2 h$ for h.

13. _____

14. (5 points) Solve $|2x + 1| < 19$. Express your answer in interval notation.

14. _____

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

$$f(x) = \begin{cases} 3 & \text{if } x < 2 \\ 1 - x & \text{if } x \geq 2 \end{cases}$$

16. (5 points) Find an equation of the line passing through the points $(-1, 2)$ and $(3, -4)$.

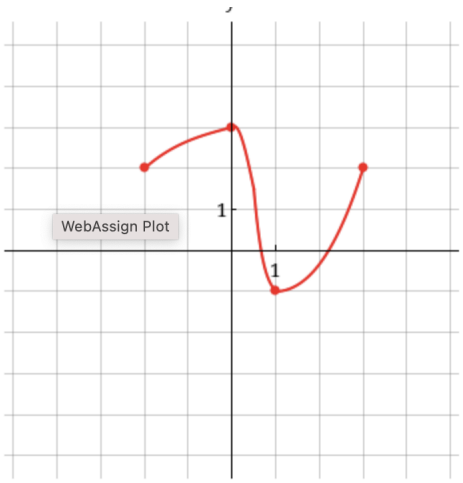
16. _____

17. (5 points) Find the domain of $g(t) = \sqrt{7 - 3t}$

17. _____

18. (5 points) Find the net change of $f(x) = 3x^2 + 2$ between $x = 1$ and $x = 1 + h$.

18. _____



19. (5 points) Find the range of the function whose graph is given

19. _____

20. (5 points) Sketch the graph $y = -(x + 1)^2$. Label all intercepts on your graph.