Answer each non-graph question CLEARLY on the line provided.

Name: _____ ID: _____

Page	Points	Score
1	8	
2	12	
3	12	
4	12	
5	12	
6	12	
7	12	
8	12	
9	8	
Total:	100	

1. (4 points) Perform the indicated operations $\frac{\frac{2}{5}+\frac{1}{2}}{\frac{1}{5}-\frac{6}{15}}$ and simplify as much as possible.

1. _____

2. (4 points) Evaluate and simplify $\left(\frac{64}{81}\right)^{-\frac{1}{2}}$ completely. Eliminate any negative exponents.

2. _____

3. (4 points) Perform the multiplication $(3x-4)(3x+4)$ and simplify completely. Leave no parenthesis in final answer.

3. _____

4. (4 points) Factor $z^3 - 2z^2 - 3z$ completely.

4. _____

5. (4 points) Perform the multiplication $\frac{x^2-36}{x^2-16} \cdot \frac{2x+8}{x-6}$ and simplify completely.

5. _____

6. (4 points) Perform the addition $1 + \frac{2}{x} + \frac{3}{x^2}$ and simplify completely as one rational expression.

6. _____

7. (4 points) Find an equation of the line through the point $(0, -2)$ and parallel to the line $2x+3y = 4$.

7. _____

8. (4 points) Find all solutions x to $\sqrt{6x + 4} + 2 = x$.

8. _____

9. (4 points) Evaluate and simplify the expression $g(a+5) - g(5)$ completely when $g(t) = 2t^2$.

9. _____

10. (4 points) Find all solutions x to $(x-4)^2 = 5$.

10. _____

11. (4 points) Find the domain and range of $f(x) = 10 + 2x - x^2$. Write your answer using interval notation.

11. _____

12. (4 points) A 21−ft ladder leans against a building so that the angle between the ground and the ladder is 68°. How high does the ladder reach on the building? (You may leave sin, cos, or tan in your answer).

12. _____

13. (4 points) Evaluate $\sin\left(-\frac{5\pi}{3}\right)$.

13. _____

14. (4 points) Evaluate $\cos\theta$ if $\tan\theta = \frac{4}{3}$ and θ is in Quadrant III.

14. _____

15. (4 points) Find all solutions x to $6^{3x-4} = \frac{1}{6}$.

15. _____

16. (4 points) Evaluate $\log_6(\frac{1}{36})$.

16. _____

17. (4 points) Find the degree measure of the angle with radian measure $-\frac{3\pi}{2}$.

17. _____

18. (4 points) Find $f^{-1}(x)$ when $f(x) = \frac{x}{x+2}$.

18. _____

19. (4 points) Find $\sin^{-1}(-\frac{1}{2})$

19. _____

20. (4 points) Find all solutions x to $x^2 - 18x = 19$.

20. _____

21. (4 points) Simplify $\frac{y^{-2}z^{-3}}{y^{-1}}$ as much as possible and eliminate any negative exponents.

21. _____

22. (4 points) Sketch the graph of piecewise defined function $\text{f(x)} = \begin{cases} x-1 & \text{if } x \leq 1 \\ x^2 & \text{if } x > 1 \end{cases}$

23. (4 points) Sketch the graph of $h(x) = x^4 - 4x^2$. Label all intercepts on your graph.

24. (4 points) Sketch the graph of $y = \log_2(x+2)$ not by plotting points but by starting with the graph of a standard function and applying transformations. Label all intercepts and asymptotes on the graph.

25. (4 points) Sketch the graph $f(x) = 2 - x - x^2$. Label the vertex and all intercepts on your graph.