

You have 2hr 15min. Answer each non-graph question neatly on the line provided.

Name: _____

ID: _____

1. (4 points) Simplify $\frac{1}{2} + \frac{2}{5} - 10$ completely.

1. _____

2. (4 points) Simplify $\frac{2^2 z^4 z^6}{2 z^5 z^{-1}}$ completely.

2. _____

3. (4 points) Evaluate $27^{-\frac{2}{3}}$ and simplify completely.

3. _____

4. (4 points) Sketch the graph of $f(x) = -3^x + 3$. Label all asymptotes on your graph for full credit.

5. (4 points) Simplify $\frac{z^2+6z-16}{z^2-4}$.

5. _____

6. (4 points) Perform the addition $\frac{x}{(x+7)^2} + \frac{8}{x+7}$ and simplify completely.

6. _____

7. (4 points) Find the domain of $\frac{1}{\sqrt{x-3}}$. Answer using interval notation.

7. _____

8. (4 points) Sketch the graph of the piecewise function

$$f(x) = \begin{cases} 2 & \text{if } x < 1 \\ 5 - x^2 & \text{if } x \geq 1 \end{cases}$$

9. (4 points) Solve $\frac{5x-10}{5x+3} = \frac{3}{4}$ for x .

9. _____

10. (4 points) Find an equation of the line that passes through the point $(-1, -2)$ and is parallel to the line $x + 2y = 1$.

10. _____

11. (4 points) Solve the system

$$\begin{cases} 2x + y = 10 \\ x - 3y = -16 \end{cases}$$

11. _____

12. (4 points) Sketch the graph of $y = -(x - 7)^2$.

13. (4 points) Solve $-6 < 4 - 2x$ for x . Express your answer using interval notation.

13. _____

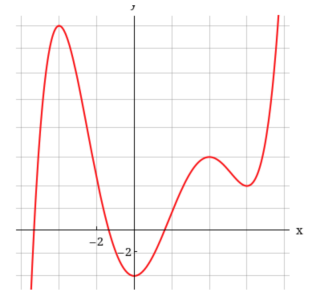
14. (4 points) Use $f(x) = 2x + 5$ and $g(x) = 3 - x^2$ to evaluate $(g \circ f)(-1)$. Simplify your answer.

14. _____

15. (4 points) Find the average rate of change of $f(t) = 8t^2$ between $t = \frac{1}{4}$ and $t = \frac{1}{2}$.

15. _____

16. (4 points) Sketch the graph of $g(x) = 1 - 4x - x^2$. Label the vertex on your graph for full credit.

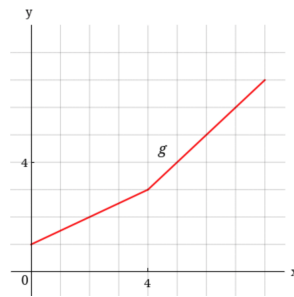


17. (4 points) Find the interval(s) where the function whose graph is given is decreasing.
Express your answer in interval notation on the answer line.

17. _____

18. (4 points) Solve $F = G \frac{mM}{r^2}$ for G .

18. _____



19. (4 points) Use the graph to evaluate $g^{-1}(3)$

19. _____

20. (4 points) Solve $7x^2 - 63 = 0$ for x .

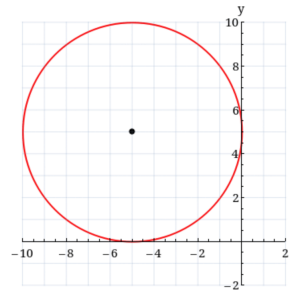
20. _____

21. (4 points) Evaluate $\log_{100}(.1)$

21. _____

22. (4 points) Sketch the graph $g(x) = -\sqrt{x+6}$

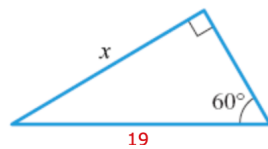
22. _____



23. (4 points) Find an equation of the circle shown.

23. _____

24. (4 points) Find the side answer.



labeled x . You may leave sin, cos, or tan in your

24. _____

25. (4 points) Evaluate $\cos\left(\frac{3\pi}{4}\right)$.

25. _____