Math 190 Practice Final Exam$_A$

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

Name: _____ ID: _____

1. (4 points) Simplify $\frac{3}{2} + \frac{3}{8} - \frac{1}{4}$ completely as one reduced fraction.
   A. $\frac{3}{2}$
   B. $\frac{13}{4}$
   C. $\frac{13}{2}$
   D. $\frac{3}{8}$
   E. none of these

   1. _____

2. (4 points) Simplify $\frac{(2a^4b^{-4})^3}{b^4}$ completely without using negative exponents.
   A. $\frac{8a^{12}}{b^{16}}$
   B. $\frac{8a^{12}}{b^{20}}$
   C. $\frac{8a^7}{b^{20}}$
   D. $\frac{8a^7}{b^{216}}$
   E. none of these

   2. _____

3. (4 points) Evaluate $\left(\frac{25}{9}\right)^{-\frac{3}{2}}$ and simplify completely.
   A. $\frac{125}{27}$
   B. $\frac{27}{125}$
   C. $\frac{5}{3}$
   D. $\frac{3}{5}$
   E. none of these

   3. _____

4. (4 points) Find an angle between 0 and 2π coterminal with $-\frac{2\pi}{3}$.
   A. $\frac{2\pi}{3}$
   B. $\frac{4\pi}{3}$
   C. $\frac{\pi}{3}$
   D. $\frac{8\pi}{s3}$
   E. none of these

   4. _____

5. (4 points) Expand $(1+8x)(x^2-9x+1)$ and simplify.

   A. $8x^3-71x^2+1$

   B. $8x^3-71x^2-x$

   C. $8x^3-x+1$

   D. $8x^3-71x^2-x+1$

   E. none of these

5. _____

6. (4 points) Perform the division $\frac{x^2-36}{x^2-16} \div \frac{2x+12}{x-4}$.

6. _____

7. (4 points) Perform the addition $\frac{2}{x+8} + \frac{1}{x^2-64}$ and simplify completely.

7. _____

8. (4 points) Find all solutions x to $4(x+8)+1 = -3(x-2)-1$.

8. _____

9. (4 points) Sketch the graph of the piecewise function $\text{f(x)} = \begin{cases} 2 & \text{if } x < -1 \\ 5-x^2 & \text{if } x \geq -1 \end{cases}$

10. (4 points) Find the center of the circle where $P(-1, 1)$ and $Q(5, -3)$ are endpoints of a diameter.

10. _____

11. (4 points) Find an equation of the line that passes through the points $(-1, -2)$ and $(7, 6)$.

11. _____

12. (4 points) Find all real solutions of $x^3 - 12x^2 + 32x = 0$.

12. _____

13. (4 points) Sketch the graph of $y = -|x + 10|$.

14. (4 points) Solve $x + 4 < 2(8 - 2x)$ for x. Express your answer using interval notation.

14. _____

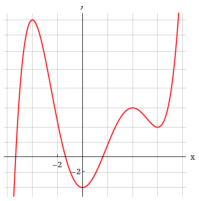
15. (4 points) Use $f(x) = x + 2$ and $g(x) = 4 - x^2$ to evaluate $(g \circ f)(5)$. Simplify your answer.

15. _____

16. (4 points) Find the net change of $f(t) = \frac{2}{t}$ between $t = \frac{-1}{4}$ and $t = \frac{1}{2}$.

16. _____

17. (4 points) Sketch the graph of $f(x) = 2^{x+1} + 3$. Sketch the asymptote for full credit.

18. (4 points) Find the local minimum values of the function whose graph is given.  Express your answer in interval notation on the answer line.

18. _____

19. (4 points) Evaluate and simplify $f(10+h)-f(10)$ when $f(x)=2x^2+5$.

19. _____

20. (4 points) Use the table

x	1	2	3	4	5	6
$f(x)$	2	3	5	1	6	3
$g(x)$	3	4	1	5	2	6

to evaluate $g(f(2))$

20. _____

21. (4 points) Solve $wd=2rTH$ for r

21. _____

22. (4 points) Find all real solutions of $\sqrt{12x-5}=3$.

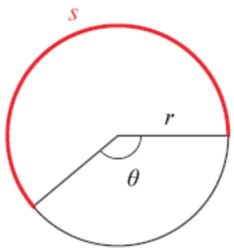
22. _____

23. (4 points) Evaluate $\log_4(\frac{1}{16})$.

23. _____

24. (4 points) Find an angle between $0°$ and $360°$ that is coterminal with $740°$.

24. _____



25. (4 points) Find the length s of the circular arc when $r = 8$ and $\theta = 120°$.

25. _____

26. (4 points) A 22-ft ladder leans against a building so that the angle between the ground and the ladder is $60°$. How high does the ladder reach on the building?

26. _____

27. (4 points) Find the range of $f(x) = x^2 + 6x$. Express your answer in interval notation.

27. _____