

Week 4 Math 1508 Review for Exam 1

[Chapter 1]

- Find the distance between the two points and find the midpoint of the line segment joining the two points.
 - $(-1,2), (4,6)$
 - $\left(\frac{1}{2}, 1\right), \left(-\frac{5}{2}, \frac{4}{3}\right)$
- Find the x- and y-intercepts of the graph of the equations.
 - $y = x^2 + x - 30$
 - $y = \sqrt{x - 30}$
- Write the standard form of the equation of the circle with the given characteristics.
Center: $(2,-1)$; Radius: 6
- Write the equation of the lines through the given point (a) parallel to and (b) perpendicular to the given line.
 - $2x - 4y = 3, (3,4)$
 - $2x - 5y = 15, \left(\frac{1}{2}, -\frac{3}{4}\right)$
- Evaluate the function at each specified value if possible.
 - $f(x) = \sqrt{x^2 - x}$, at $x = -2$
 - $f(x) = -x^2 + 3x + 21$, at $x = -5$
 - $f(x) = \begin{cases} 3x - 5 & x < 2 \\ x^2 + 5x - 1 & x \geq 2 \end{cases}$, at $x = 2$
 - $f(x) = \begin{cases} 3x - 5 & x < 2 \\ x^2 + 5x - 1 & x \geq 2 \end{cases}$, at $x = -2$
- Find the zeros of the functions algebraically
 - $f(x) = \frac{x^2+4x-21}{x+3}$
 - $f(x) = 25 - \frac{3}{x^2}$

7. Consider the function $f(x) = \sqrt{x - 5}$ and $g(x) = \frac{1}{9+x}$. Find the following
- The domain of $f(x)$
 - The domain of $g(x)$
 - The domain of the composite function $g(f(x))$
8. Consider the function $f(x) = \sqrt[3]{x + 4}$ and $g(x) = x^3$. Find the following
- $g(f(-12))$
 - $f(g(-2))$
9. Find the inverse of the following functions algebraically.
- $f(x) = \sqrt{3x - 5}$
 - $f(x) = \frac{x-3}{3x+5}$
 - $f(x) = 4 - 7x^3$
10. Identify the vertex, axis of symmetry and x-intercepts for the following quadratic functions
- $f(x) = 8x^2 - 22x - 21$
 - $f(x) = 10x^2 + 17x + 3$
11. Use the given zero to find all the zeros of the function
- $f(x) = 2x^3 - 5x^2 + 8x - 20$ with zero: $2i$
 - $f(x) = x^4 + 3x^3 - 5x^2 - 21x + 22$ with zero: $-3 + i\sqrt{2}$
12. Find the rational zeros of the function
- $f(x) = x^3 - 13x + 12$
 - $f(x) = 2x^4 - 15x^3 + 23x^2 + 15x - 25$
13. Perform the operation and write the result in standard form
- $(23 - 4i) - (5 + 11i)$
 - $(3 - 7i)(7 - 7i)$
 - $(5 - 4i)^2$
 - $\frac{i}{2+3i} - \frac{2i}{5-8i}$