

HOMEWORK 1 - MATH 112

DUE DATE: Thursday, September 8

INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. One part of each problem will be chosen at random and graded. Each question is worth 1 point. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. Find the slope and the y -intercept of the line with equation $7x - 3y = 12$.
2. Find the equation of the line that is parallel to $x - 2y = 5$ passing through $(-2, 1)$ and the equation of the line that passes through $(3, 1)$ and is perpendicular to $-2x + 3y = 3$.
3. Find the domain, graph and then find the codomain of the function $f(x) = x^2 - 6x + 8$.
4. Find the inverse f^{-1} of $f(x) = \sqrt[3]{x+2} + 1$ and sketch the graphs of f and f^{-1} on the same axes.
5. Find the limits $\lim_{x \rightarrow 1} f(x)$ and $\lim_{x \rightarrow 0} g(x)$ for the following functions

6. Find the following limits

- (a) $\lim_{x \rightarrow 3} (2x - 5)$
- (b) $\lim_{x \rightarrow 5} \sqrt{x + 11}$
- (c) $\lim_{x \rightarrow 7} \frac{5x}{2x+3}$
- (d) $\lim_{x \rightarrow 3} \frac{\sqrt{x+1}}{x-4}$

7. Find the limits

- (a) $\lim_{x \rightarrow -1} \frac{x^2-1}{x+1}$
- (b) $\lim_{x \rightarrow -2} \frac{x^3+8}{x+2}$
- (c) $\lim_{x \rightarrow 2} \frac{2-x}{x^2-4}$
- (d) $\lim_{x \rightarrow 3} f(x)$, where $f(x) = \begin{cases} \frac{1}{3}x - 2, & \text{if } x \leq 3 \\ -2x + 5, & \text{if } x > 3 \end{cases}$

8. Discuss the continuity of $f(x) = \frac{1}{x^2-9}$ and $g(x) = \frac{1}{x^2+1}$.