

QUIZ 1 - MATH 112

Thursday, January 25

YOUR NAME: _____

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Read each problem **very carefully** before starting to solve it and do only what is asked. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [4 points] Find an equation for the line ℓ , passing through $(1, 10)$, and perpendicular to the line ℓ' having equation $x + 7y = 21$.

2. [4 points] Find the domain of the function $f(x) = \frac{x + 7}{x^3 + 4x^2 - 21x}$.

3. [6 points] Suppose an enterprise producing and selling a certain commodity has fixed costs \$100 and that each unit costs \$7 to make. Suppose, also, that the revenue function is $R(x) = -x^2 + 22x + 200$, where x is the number of units produced and sold.

(a) Find an equation for the cost $C(x)$ for producing x units.

(b) Find how many units need to be produced to break even.

(c) Find how many units need to be produced to maximize the profit.

4. [4 points] Graph the piecewise defined function

$$f(x) = \begin{cases} 3, & \text{if } x < -1 \\ x^2, & \text{if } -1 \leq x < 1 \\ -x + 3, & \text{if } x \geq 1 \end{cases} .$$