Quiz 2 Mat 587. Fall 16, Quintana Name:

1. Let $A = \{n \in \mathbb{Z} \,|n \text{ is even}\}$, $B = \{n \in A \mid n \notin [10, \infty)\}$ and $C = 1, \ldots, 10\}$. Which of the following are true?
a. $A \ni 2$;
b. $A \cup B = \mathbb{Z}$;
c. $A \cap B = A$;
d. $C \subseteq B$;
e. $(\forall x \in A)\ (\exists y \in B)$ such that $x = \frac{y}{2}$

2. Let $f : \mathbb{R} \to \mathbb{R}$be defined by $f(x) = \sqrt{x-1}$. Find $\text{dom}(g \circ f)$ if g is given by the table:

x	1	2	3	4	5
$g(x)$	10	11	-3	5	0

3. Plot the graph of f if

$$f(x) = \begin{cases} \sin(x), & x < \pi \\ \tan(x), & \pi \leq x \leq 2\pi \\ \cos(x), & 2\pi < x < \rho. \end{cases}$$

4. Find

$$\begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix} \cdot \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}.$$

5. Define $f(x) = \mathrm{e}^{\sin(x+1)} + k\cos(x)$ for all $k \in \mathbb{N}$. Compute

$$\sum_{k=1}^{3} \int_1^{2k} f(x)dx.$$