SET BUILDER

MATH 73

LAST NAME	FIRST NAME	DATE

Definition. $\mathbb{N}$ is the set of *natural* numbers consisting of non-negative integers:

$$\mathbb{N} = \{0, 1, 2, 3, 4, 5, 6, \ldots\}$$

1 (4 points)**.** List six or more elements for each of the following sets using the roster notation:

(a) $\left\{7k-4 \;\middle|\; k \in \mathbb{Z}\right\}$

(b) $\left\{\dfrac{\pi}{2n} \;\middle|\; n \in \mathbb{Z}^+\right\}$

(c) $\left\{(x-3)^2+1 \;\middle|\; x \in \mathbb{N}\right\}$

(d) $\left\{\dfrac{\pi}{2}+2\pi k \;\middle|\; k \in \mathbb{Z}\right\}$

(e) $\left\{(-1)^m+3m \;\middle|\; m \in \mathbb{Z}^+\right\}$

2 (4 points)**.** Use set builder to describe the following sets:

(a) $\{10, 22, 34, 46, 58, \ldots\}$

(b) $\{\ldots, -15\pi, -10\pi, -5\pi, 0, 5\pi, 10\pi, 15\pi, \ldots\}$

(c) $\{0, 1, 8, 27, 64, 125, 216, 343, \ldots\}$

(d) $\left\{\ldots, \frac{-11\pi}{4}, \frac{-5\pi}{4}, \frac{\pi}{4}, \frac{7\pi}{4}, \frac{13\pi}{4}, \frac{19\pi}{4}, \frac{25\pi}{4}, \frac{31\pi}{4}, \frac{37\pi}{4}, \ldots\right\}$

(e) $\{9, 99, 999, 9999, 99999, 999999, \ldots\}$