Quiz 2

1) Make a Venn diagram to illustrate $\overline{B} \cup A$

2) $U =$ students in a class, $B =$ students with black hair, $R =$ students wearing something red, and $T =$ students wearing tennis shoes.

a) Verbally describe students in the shaded region.

b) Express the shaded region using symbols such as $\cup, \cap, -, \cap, \overline{ }$, $(B \cap T) - R$

3) a) Convert the base-10 numeral 174 to base-5.

Place values: 1, 5, 25, 125

$\begin{align*}
\text{174} & \div 125 = 1 \text{ remainder 49} \\
\text{49} & \div 25 = 1 \text{ remainder 24} \\
\text{24} & \div 5 = 4 \text{ remainder 4} \\
\end{align*}$

$174_{10} = 1144_{5}$

b) Convert the binary number $1001001_{two}$ to base-10,

$\begin{align*}
\text{1} \cdot 64 + \text{1} \cdot 8 + \text{0} \cdot 2 + \text{0} \cdot \text{ones} \\
\end{align*}$

$1001001_{two} = 73_{10}$

4) Identify the following sequence as arithmetic, geometric or neither.

$17, 22, 27, 32, 37, \ldots$

$\begin{align*}
\text{Arithmetic with common difference 5.} \\
17 + 5 & = 22 \\
17 + 2 \cdot 5 & = 27 \\
17 + 3 \cdot 5 & = 32 \\
\end{align*}$

What is the 41st term of this sequence? (Do not list all of the terms).

$17 + 40 \cdot 5 = 17 + 200 = 217$