Name_____ Group_____ /20

Functions: Piecewise Functions

1) Determine the domain and range of the following piecewise function. (2 pts)

$$f(x)=\begin{cases}2x+4, & -4\le x\le 0\\ -x^2+4, & 0\le x\le 3\\ \frac{1}{2}|x-3|-5, & 3\le x\le 8\end{cases}$$

Domain: $[-4,8]$
Range: $[-5,4]$

2) Given the following piecewise function, solve for y when $x=6$ (2 pts)

$$f(x)=\begin{cases}\frac{8}{x-4}+2, & -4\le x\le 0\\ 2\sqrt{x}, & 0\le x\le 4\\ -\frac{1}{2}|x-5|+4.5, & 4\le x\le 8\end{cases}$$

$y=4$

3) Given the following piecewise function, solve for x when $y=3.5$ (4 pts)

$$f(x)=\begin{cases}\frac{8}{x-4}+2, & -4\le x\le 0\\ 2\sqrt{x}, & 0\le x\le 4\\ -\frac{1}{2}|x-5|+4.5, & 4\le x\le 8\end{cases}$$

$x=3.063\ and\ x=7$

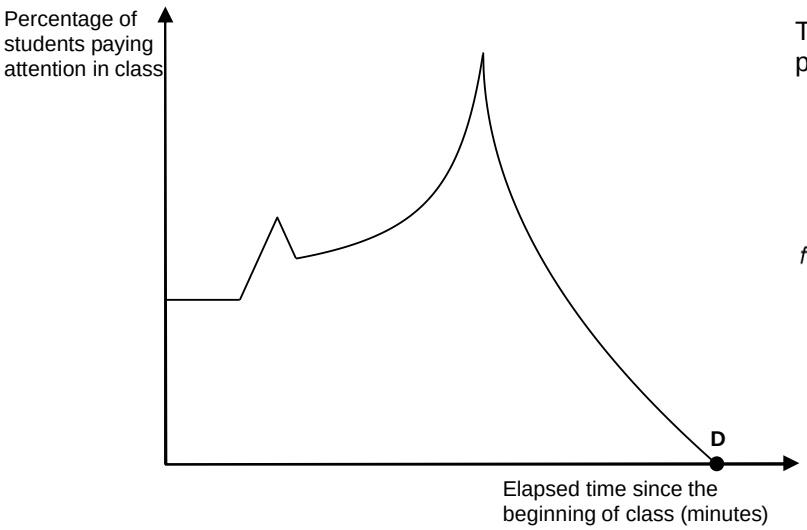
4) Given the following piecewise function, determine when $f(x) \geq 0$ (4 pts)

$$f(x) = \begin{cases} 2|x+2| - 3, & x \leq 0 \\ -\frac{1}{2}x + 1, & 0 \leq x \leq 2 \\ -2\sqrt{x-2}, & 2 \leq x \end{cases}$$

$]-\infty, -3.5] \cup [-0.5, 2]$

5) (8 pts)

The graph below shows the percentage of students paying attention in class over time.



The graph represents the following piecewise function:

$$f(t) = \begin{cases} 50 & 0 \leq t \leq 2 \\ a|t-3| + 55 & 2 \leq t \leq 3.5 \\ \frac{-15}{t-h} + 50 & 3.5 \leq t \leq 8.5 \\ -26\sqrt{t-8.5} + k & 8.5 \leq t \leq ? \end{cases}$$

Where t: elapsed time since the beginning of class, in minutes.

$f(t)$: percentage of students paying attention in class

After how many minutes are there no students paying attention in class (point D)?

After 14.75 minutes there are no students paying attention.