

Name _____ Group _____

/20

Functions: Piecewise Functions

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

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

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

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

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

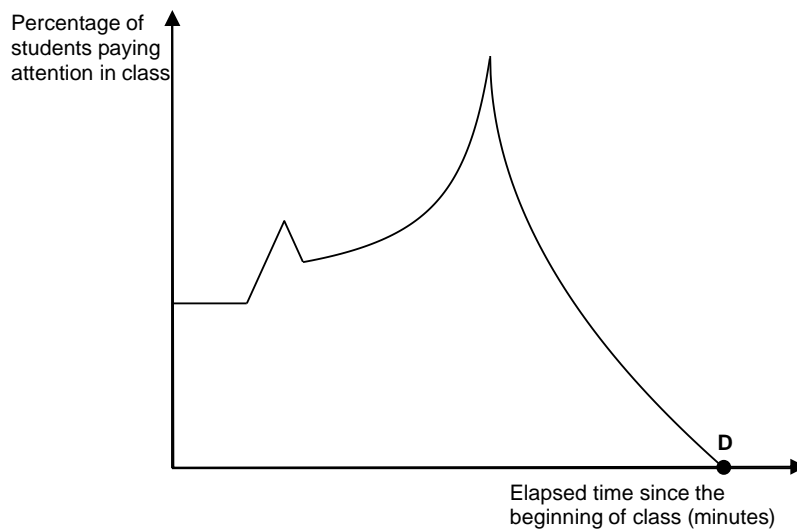
$$f(x) = \begin{cases} \frac{8}{x - 4} + 2, & -4 \leq x \leq 0 \\ 2\sqrt{x}, & 0 \leq x \leq 4 \\ -\frac{1}{2}|x - 5| + 4.5, & 4 \leq x \leq 8 \end{cases}$$

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

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

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)?