

5. [10 points] *For potential partial credit, be sure to show your work.*

- a. [4 points] Suppose that the domain of $f(t)$ is the interval $[-10, 20)$ and the range of $f(t)$ is the interval $(-8, \infty)$. Find the domain and range of the function $h(t) = 5f(-2t) + 6$.

Domain: _____

Range: _____

- b. [3 points] If a weight hanging on a string of length 6 feet swings through 11° on either side of the vertical, how long is the arc through which the weight moves from one high point to the next high point? (*Give your answer in exact form and include units.*)

Answer: _____

- c. [3 points] The graph of $T(x)$ can be obtained from the graph of $\tan(x)$ by
- first stretching the graph horizontally (away from the vertical axis) by a factor of 3,
 - then shifting the graph to the right 5 units,
 - then reflecting the graph across the horizontal axis,
 - and finally shifting the graph down 2 units.

Find a formula for $T(x)$.

Answer: $T(x) =$ _____