Pre-Calc AB Worksheet 5 : Answers

1. For graphs see class notes.

   (a) Domain: $(-\infty, \infty)$, Range: $(-\infty, \infty)$

   (b) Domain: $(-\infty, \infty)$, Range: $[0, \infty)$

   (c) Domain: $(-\infty, \infty)$, Range: $(-\infty, \infty)$

   (d) Domain: $(-\infty, 0) \cup (0, \infty)$, Range: $(-\infty, 0) \cup (0, \infty)$

   (e) Domain: $(-\infty, 0) \cup (0, \infty)$, Range: $(0, \infty)$

   (f) Domain: $[0, \infty)$, Range: $[0, \infty)$

   (g) Domain: $(-\infty, \infty)$, Range: $[0, \infty)$

   (h) Domain: $(-\infty, \infty)$, Range: $(-\infty, \infty)$

   (i) Domain: $(-\infty, \infty)$, Range: $\{k\}$

   (j) Domain: $[-c, c]$, Range: $[0, c]$

2. (a) About 0.25 miles from home.

   (b) She was about 1 mile from home at 6:45PM and 7:50PM.

   (c) From about 6:37PM to 7:58PM, Holly is more than half a mile away.

   (d) She was stationary.

   (e) The beach is about 2.5 miles from her house. She reached it at about 7:10PM.

   (f) She was walking about $\frac{1}{15}$ miles per minute or about 4 miles per hour.

   (g) She was walking the fastest just after 7:10PM when leaving the beach. This is because the slope of the function is steepest here which means her rate is the fastest.

   (h) She walked about 5 miles total and arrived home at 8:05PM.

   (i) Yes she did, from 7:45PM to 8:05PM she walked at a constant speed because the function is a line which has constant slope.

3. (i) $k(x) = f(x - 2)$

   (ii) $m(x) = f\left(\frac{1}{2}x\right)$

   (iii) $g(x) = f(x) + 2$

   (iv) $p(x) = f(-x)$

   (v) $q(x) = f(x - 3) + 4$

   (vi) $n(x) = -f(x)$

   (vii) NONE

   (viii) $h(x) = f(2x)$

4. The graph of $y = -3f(x+5)-4$ is the graph of $f(x)$ is reflected about the y-axis, streched vertically by a factor of 3, shifted left 5 units and then down 4 units.

5. (a) $y = 5f(x)$

   (b) $y = f(-(x - 3))$

   (c) $y = f(2x)$

   (d) $y = -f(x) - 4$

   (e) $y = f(-(x + 7))$