Quiz 2

Key

Show *all* your work. Reasonable supporting work must be shown to earn credit. There are *two* sides to this quiz.

1. (§1.5 #116) Let f be the function that associates the employee number x of each employee of the ABC Corporation with his or her annual salary $f(x)$ in dollars.

   (a) [1] Jodi's employee number is 12345. Interpret what $f(12345) = \$40,000$ means in terms of dollars and people.

   Jodi makes a $40,000 annual salary

   correct (+.5) terms & salary & Jodi (+1.5)

   (b) [3] Suppose the employee making \$25,000 or more received a 3% raise, while those making less than \$25,000 received a 9% raise. Write a function to describe these new salaries.

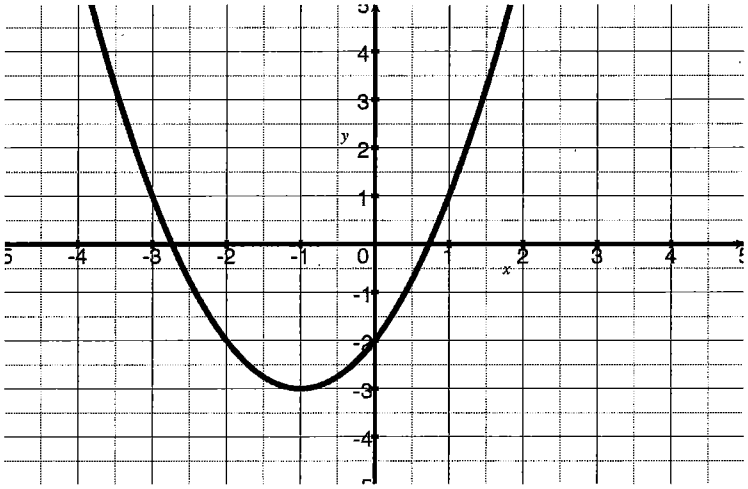
   new salary $= \begin{cases} 1.03f(x) & \text{if } f(x) \geq 25{,}000 \\ 1.09f(x) & \text{if } 25{,}000 > f(x) \end{cases}$

   OR

   $= \begin{cases} f(x) + .03f(x) & \text{if } f(x) \geq 25{,}000 \\ f(x) + .09f(x) & \text{if } 25{,}000 > f(x) \end{cases}$

   using $f(x)$ correctly (+1)
   included base salary (the 1 in 1.03 etc) (+.5)
   pieces assigned correctly (+.5)
   percentages converted to decimals (+.5)
   stated (+.5)

2. Consider the graph of z below which is a parabola that has been shifted both vertically and horizontally.



(a) [1] (GraphTransformations #5)
Find the range of z.

$[-3, \infty)$

or $y \geq -3$

y values (+.5) good (+.5)

(b) [1] (WebHW3 #1)
Find $(z+z)(-1)$

$(z+z)(-1)$

$= z(-1) + z(-1)$ (+.5)

$= -3 + -3 = -6$ (+.5)

(c) [1] (WebHW3 #3)
Find $(z \circ z)(-1)$

$(z \circ z)(-1) = z(z(-1)) = z(-3) = 1$ (+.5) (+.5)

(d) [3] (Fall2018 TMath120 Quiz2) Find the algebraic rule/expression of z

vertex @ $(-1,-3)$ $\Rightarrow$ $y = a(x-(-1))^2 - 3$

$y = a(x+1)^2 - 3$ (+1) (.5)

passes thru $(0,-2)$ so $-2 = a(0+1)^2 - 3$

$-2 = a - 3$

$+3 \quad +3$

$1 = a$ (+.5)

so $y = (x+1)^2 - 3$

Parabola (+1)