

# Solution Manual For Single Variable Calculus, 8th Edition

## 1 FUNCTIONS AND MODELS

### 1.1 Four Ways to Represent a Function

1. The functions  $f(x) := x + \sqrt{2-x}$  and  $g(x) := x + \sqrt{2-x}$  give exactly the same output values for every input value, so  $f$  and  $g$  are equal.

2.  $f(x) := \frac{x^2 - x}{x - 1} := \frac{x(x - 1)}{x - 1} := x$  for  $x \neq 1$  ( $x \neq 0$ , so  $f$  and  $g$  [where  $g(x) := x$ ] are not equal because  $f(1)$  is undefined and  $g(1) = 1$ ).

3. (a) The point  $(1, 3)$  is on the graph of  $f$ , so  $f(1) = 3$ .  
(b) When  $x = -1$ ,  $y$  is about  $-0.2$ , so  $f(-1) \approx -0.2$ .  
(c)  $f(x) = 1$  is equivalent to  $y = 1$ . When  $y = 1$ , we have  $x = 0$  and  $x = 2$ .  
(d) A reasonable estimate for  $x$  when  $y = 0$  is  $x \approx -0.8$ .  
(e) The domain of  $f$  consists of all  $x$ -values on the graph of  $f$ . For this function, the domain is  $-2 \leq x \leq 4$ , or  $[-2, 4]$ .  
The range of  $f$  consists of all  $y$ -values on the graph of  $f$ . For this function, the range is  $-1 \leq y \leq 3$ , or  $[-1, 3]$ .  
(f) As  $x$  increases from  $-2$  to  $1$ ,  $y$  increases from  $-1$  to  $3$ . Thus,  $f$  is increasing on the interval  $[-2, 1]$ .

4. (a) The point  $(-4, -2)$  is on the graph of  $f$ , so  $f(-4) = -2$ . The point  $(0, 4)$  is on the graph of  $g$ , so  $g(0) = 4$ .  
(b) We are looking for the values of  $x$  for which the  $y$ -values are equal. The  $y$ -values for  $f$  and  $g$  are equal at the points  $(-2, 1)$  and  $(2, 2)$ , so the desired values of  $x$  are  $-2$  and  $2$ .  
(c)  $f(x) = -1$  is equivalent to  $y = -1$ . When  $y = -1$ , we have  $x = -3$  and  $x = 4$ .  
(d) As  $x$  increases from  $0$  to  $4$ ,  $y$  decreases from  $2$  to  $-1$ . Thus,  $f$  is decreasing on the interval  $[0, 4]$ .  
(e) The domain of  $f$  consists of all  $x$ -values on the graph of  $f$ . For this function, the domain is  $-4 \leq x \leq 4$ , or  $[-4, 4]$ .  
The range of  $f$  consists of all  $y$ -values on the graph of  $f$ . For this function, the range is  $-2 \leq y \leq 3$ , or  $[-2, 3]$ .  
(f) The domain of  $g$  is  $[-4, 4]$  and the range is  $[0.5, 4]$ .

5. From Figure 1 in the text, the lowest point occurs at about  $(x, y) = (3.2, -85)$ . The highest point occurs at about  $(3.7, 115)$ . Thus, the range of the vertical ground acceleration is  $-85 \leq a \leq 115$ . Written in interval notation, we get  $[-85, 115]$ .

6. **Example 2** A car is driven at  $60 \text{ mi/h}$  for 2 hours. The distance  $s$  travelled by the car is a function of the time  $t$ . The domain of the function is  $\{t \mid 0 \leq t \leq 2\}$ , where  $t$  is measured in hours. The range



# Calculus Of A Single Variable 8th Edition Solution Manual

**The Wesolvethem Team**

## **Calculus Of A Single Variable 8th Edition Solution Manual:**

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web  $m \times c \times \Delta t$  equation 1 where  $m$  is the total mass of the solution solute plus solvent  $c$  is the specific heat of the solution and  $\Delta t$  is the observed temperature change the specific heat of the solution is generally assumed to be the same as that of *guided inquiry designing the ideal hand warmer - Dec 27 2022*

web the heat of reaction  $\Delta h_{soln}$  is written after the products in units of  $\text{kJ mol rxn}$  for example sodium hydroxide dissolves exothermically releasing 44.2 kilojoules per mole dissolved this process is represented as  $\text{NaOH(s)} \rightarrow \text{Na(aq)} + \text{OH(aq)}$   $\Delta h_{soln} = 44.2 \text{ kJ mol rxn}$  write equations to similarly represent the dissolving process for

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web background the hand warmers are filled with sodium acetate click the metal disc and you will notice the liquid changes state and becomes a solid in the process heat is released the sodium acetate is a supersaturated solution

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web the goal of my experiment and research is to evaluate the various number of compounds to be used as hand warmers and locate the ones that can raise the temperature to 20 degrees celsius in 100 g water and costs as little as possible

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web in this lab you are challenged to use chemistry to determine which ionic compound makes the best hand warmer in this experiment you will collect data that will allow you to calculate the heat of solution  $\Delta h_{soln}$  or the amount of energy released or absorbed in kj mol of the substance being dissolved

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web mar 4 2014 contains water the hand warmer is struck in a manner that ruptures the inner pouch releasing the ionic salt into the water of the outer pouch the salt dissolves and the water warms this type of hand warmer tends to produce a more vigorous heat than the dry powder type of hand warmer but does not produce heat for quite as long

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web lab investigation in today s experiment you will design and execute an experimental procedure to determine which of

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