College algebra inverse function worksheet answer key

In this spreadsheet we will use matlab to study functions y f x and their inverses. Get endless practice right here in finding reverse features. Inverse Algebraic Functions College of Southern Nevada Determine the domain and scope of the opposite of a function. Spreadsheet with algebra algebra inverse functions. This guide is designed for use by dr. 6 o on raddgeh jw xintphp oifn sf6i wnmiktkeg raflcgtezber0a's 2wd spreadsheet of kuta software llc kuta software infinite algebra 2 name function inverses date period. Determine if a function has a reverse function. Plus a printed copy or reply sheet is just a click away. 1 gx 1. Bottomless spreadsheet with inverse functions. 8 b2b0z1 62e 9keuwtua 2 7sqozfst6w la wrve h el qlsc0. The formula that Betty seeks corresponds to the idea of a reverse function, which is a function in which the input of the original function becomes the output of the inverse function and output of the original function becomes the input of the inverse function. Chiorescu's Spring 2015 college algebra class. At the end of this section students will be able to. Math 1111 college algebra. Keep in mind that a feature is a relationship that associates each element of the domain with exactly one element in its area. 1 names inverse function spreadsheet date period find the opposite of each function. X p uanl glb br xig hdtys t qr3e tsmefr zvweedj. With the click of a button, this bottomless worksheet generates an additional ten problems that you can solve. F ukauztmaf xs8osftvw4a5roser olylzcwc d oallhlu hrrivgmhzt0s8 7rrepsxelrtvbe6dv3 f nmuapdiea wwoictchh fivnfriin yixtsea watlaabgeexrwa1 32nf spreadsheet of kuta software llc college alge id. Find the opposite of a feature. Algebra 2 Inverse Functions Spreadsheet Tahiro Info Algebra Features Spreadsheets Graphs Linear Features Spreadsheets Find Function Inverses Examples Solutions Spreadsheet Videos Precalculus Inverse Functions SpreadsheetSRecords Briefencounters Spreadsheet Inverse Function Spreadsheet Carlos Lomas Spreadsheet for Inverse Function Spreadsheet Homeschooldressage Com College Algebra Spreadsheet Math College Algebra Spreadsheet Printable Math Spreadsheet For College Inspiring Collection of Algebra Inverses of Linear Features Common Core Algebra 2 Homework New 50 Trig Integrals and Derivatives Cheat Sheet Erkal 30 Inverse Function Word Problems Spreadsheet 7th Grade Math Spreadsheet Quiz Spreadsheet Cube Root Function Inverses Study Com Linear and Non-Linear Functions Spreadsheet Math Linear and Non-Linear Algebra 2 Spreadsheet Exponential and Logarithmic Features Spreadsheet Features Inverse and Compound Functions Algebra and Spreadsheet Functions Inverse Function Spreadsheet College Algebra Spreadsheet Features And 2 7 Inverse Functions Solution Trigonometric Equations Spreadsheet Answers Math Derivative of the Inverse Sine Cosine and Tangent Functions Spreadsheet Template 12 1 Trigonometric Functions in right Glencoe Algebra 2 Algebra Inverse Function Math Algebra 2 Spreadsheet General Features General Features Spreadsheet Algebra 2 Spreadsheet Math Aids Com Algebra 2 Spreadsheet Honors For All Download and Sh On High School An Inverses of Linear Features Common Core Algebra 2 Homework New Intro to Inverse Features Video Khan Academy Inverse Functions Cool Math Algebra Help Lessons How to Find The Mathematical Spreadsheets Inverse Function SpreadsheetS Algebra Spreadsheet Features and Sections of This , confirm inverse features. Determine the domain and scope of an inverted function, and limit the domain of a function to make it one-to-one. Find or evaluate the inverse function. Use the graph of a one-to-one function to draw its inverse function on the same axes. A reversible heat pump is an air conditioning system that is an air conditioner and a heater in a single unit. Operated in one direction, it pumps heat out of a house to provide cooling. Operating in reverse, it pumps heat into the building from the outside, even in cool weather, to provide heat. As a heater heats out, a heat pump is several times more efficient than conventional electrical resistance heating. If some physical machines can run in two directions, we may ask if some of the function machines we have studied can also run backwards. Figure 1 provides a visual representation of this question. In this section we will consider the reverse nature of features. Figure 1 Can a function machine work in reverse? Suppose a fashion designer travels to Milan for a fashion show wanting to know what the temperature will be. He's not familiar with the Celsius scale. To get an idea of how temperature measurements are related, he asks his assistant, Betty, to convert 75 degrees Fahrenheit to degrees Celsius. She finds formula C= 5 9 (F−32) C= 5 9 (F−32) and replaces 75 for F F to calculate 5 9 (75−32) ≈24 ° C 9 (75-32) ≈24 ° C Knowing, That a comfortable 75 degrees Fahrenheit is about 24 degrees Celsius, he sends his assistant the week's weather forecast from Figure 2 to Milan, and asks her to convert all temperatures to degrees Fahrenheit. Figure 2 Initially, Betty is considering using the formula she has already found to complete the conversions. After all, she knows her algebra, and can easily solve the equation for F F after replacing a value for C.C. For example, to convert 26 degrees Celsius, she could type 26 = 5 9 (F−32) 26⁄ 9 5 = F−32 F = 26】 9 5 +32≈79 26 = 5 9 (F−32) 26】 9 5 = F−32 F = 26】 9 5 +32≈79 After considering this possibility for a moment, but she realizes that solving the equation for each of the temperatures will be terribly dull. She realizes that since evaluation is easier than solving, it would be much more convenient to have another formula, one that takes Celsius temperature and Fahrenheit temperature. The formula that Betty searches for corresponds to the idea of a reverse function, which is a function in which the input of the original function becomes the output of the inverse function, and the output of the original function becomes the input of the reverse function. With a function f(x), f(x), we represent its inverse as f −1 (x), f −1 (x), read as f f inverse of x. x. The swollen −1 −1 is part of the notation. It is not an exponent; it does not imply an effect of −1 −1 . In other words, f −1 (x) f −1 (x) does not mean 1 f(x) 1 f(x) because 1 f(x) 1 f(x) is the mutual of f f and not the inverse. The exponent-like notation comes from an analogy between function composition and multiplication: like a −1 a=1 a −1 a=1 (1 is the multiplication identity element) for any non-zero number a, a, so f −1 ∘f f −1 ∘f equals the identity function f −1 (f −1 ∘ ∘f)(x)= f −1 (f(x))= f −1 (y)=x (f −1 ∘f)(x)= f −1 (f(x))= f −1 (y)=x This applies to all x x in domain f. f. Informally, this means that reverse functions undo each other. But just as zero doesn't have a mutual, some features don't have inverses. Given a function f (x), f (x), we can check whether another function g (x) g(x) is the opposite of f (x) f (x) by checking whether either g (f(x)=x g(f(x)=x) or f(g(x)=x(g(x)=x(x)=x(g)=x(x)=x)=x)=x is true. We can test what equation is more convenient to work with because they are logically equivalent (that is, if one is true, then the other.) y=4x y=4x and y= 1 4 x y= 1 4 x is e.g. (f −1 ∘f) (x)= f −1 (4x)= 1 4 (4x)=x (f −1 ∘f)(x)= f −1 (4x)= 1 4x)=x and (f ∘ f −1)(x)=f(1 4x)= 1 4 (4x)=x and (f ∘ f −1 (x)=f(1 4x)= 1 4 (4x)=x and (f ∘ f −1)(x)=f(1 4x)= 1 4 (4x)=x and (f ∘ f −1)(x)=f(1 4x)=x and (f ∘ f −1 (x)=f(31 4 x)=4(1 4 x)=x (f ∘ f −1)(x)=f(1 4 x)=4(1 4 x)=x A few coordinate pairs from the graph of the function y=4x y=4x is (−2 , −8), (0, 0) and (2, 8). A few coordinate pairs from the graph of the y= 1 4 x y= 1 4 x are (−8, −2), (0.0) and (8.2). If we replace the input and output for each coordinate pair of a function, the replaced coordinate pairs appear on the graph of the inverse function. For any one-to-one function f(x)=y, f(x)=y, a function f −1 (x) f −1 (x) is an reverse function of f f if f −1 (y)=x. f −1 (y)=x. This can also be written as f −1 (f(x)=x f −1 (f(x)))=x for all x x's in domain f. f. It also follows that f(f −1 (x)=x f(f −1 (x)))=x for all x x in the domain f −1 f −1 if f −1 f −1 is the opposite of f. f. Notation f −1 f −1 is read f f inverse. Like any function, we can use any variable name as input to f −1, f−1 , so we often type f −1 (x), f −1 (x), which we read as f f inverse of x. x. Remember that f −1 (x)≠ 1 f(x) f −1 (x)≠ 1 and not all functions have inverses. If for a specific one-to-one function f(2)=4 f(2)=4 and f(5)=12, f(5)=12, what are the corresponding input and output values for the inverse function? The inverse function reverses input and output quantities, so if f(2) = 4,then f −1 (4)=2; f(5) = 12, then f −1 (12)=5. f(2) = 4,then f −1 (4)=2; f(5) = 12, then f −1 (12)=5. Alternatively, if we want to name the inverse function g, g, then g (4)=2 g(4)=2 and g(12)=5. g(12)=5. Note that if we display the coordinate pairs in a table shape, the input and output are clearly reversed. See Table 1. (x,f(x) (x,f(x)) (x,g(x)) (x,g(x)) (2,4) (2,4) (4,2) (4,2) (5,12) (5,12) (12,5) (12,5) Considering, at h −1 (6)=2, h −1 (6)=2, what are the corresponding input and output values for the original function h? H? For two functions f(x) f(x) and g(x), g(x), test whether the features are inverse in each other. Determine whether f(g(x)=x f(g(x)=x or g(x)=x. g(f(x)=x. If one of the statement is true, both are true, and g= f −1 g= f −1 and f= g −1 . f= g −1 . If one of the statements is false, both are false and g≠ f −1 g≠ f −1 and f≠ g −1 . (f≠ g −1 . If f(x)= 1 x+2 f(x)= 1 x+2 and g(x)= 1 x −2, g(x)= 1 x −2, g= f −1 ? g= f −1 ? g(f(x)) = 1 (1 x+2) −2 = x+2−2 = x g(f(x)) = 1 (1 x +2) −2 = x+2 = x then g= f −1 and f= g −1 g= f −1 and f= g −1 This is enough to answer yes to the question, but we can also check the other formula. f(g(x)) = 1 1 x −2+2 = 1 1 x = x f(g(x)) = 1 1 x −2+2 = 1 1 x = x Note that the inverse actions are in reverse order of the actions from the original function. If f(x)= x 3 −4 f(x)= x 3 −4 and g(x)= x+4 3 , g(x)= x +4 3 , is g= f −1 ? g= f −1 ? If f(x)= x 3 f(x)= x 3 (cube function) and g(x)= 1 3 x, g(x)= 1 3 x, g= f −1 ? g= f −1 ? f(g(x))= x 3 27 ≠x f(x))= x 3 27 ≠x No, functions are not inverses. The correct inverse to the cube is of course the cube root x 3 = x 1 3 , x 3 = x 1 3, that is, the one third is an exponent, not a multiplier. If f(x)= (x−1) 3 andg(x)= x 3 +1, f(x)= (x −1) 3 andg(x)= x 3 +1, is g= f −1 ? g= f −1 ? The outputs of the f f function are entries to f −1 , f −1 , so the area f f is also the domain of f −1 . f −1 . As the inputs to f f are outputs from f −1 , f −1 , the domain of f f is also the range f −1 . f −1 . We can visualize the situation as in Figure 3. Figure 3 Domain and range of a function and its inverse When a function has no reverse function, it is possible to create a new feature where the new feature on a restricted domain has a reverse function. The inverse f(x)= x f(x)= x is f −1 (x)= x 2 , f −1 (x)= x 2 because a square undoes a square root; but the space is the inverse root of the square root of the domain [0,∞), [0,∞), as it is the range f(x)= x . f(x)= x . We can look at this problem from the other side, starting with the square (toolbox square) function f (x)= x 2. f(x)= x 2 . If we want to construct a reverse to this function, we run into a problem because for each given output of the square function, there are two corresponding entries (except when input is 0). For example, output 9 corresponds from square function to inputs 3 and -3. But an output from a function is an input to its reverse; if this reverse input corresponds to more than one reverse output (input of the original function), then the reverse is not a function at all! To put it differently, the square function is not a one-to-one function; it fails the horizontal line test so that it does not have a reverse function. For a function to have a reverse function, it must be a one-to-one function. In many cases, if a feature isn't one-to-one, we can still limit the feature to a part of its domain where it's one-to-one. For example, we can make a limited version of the square function f (x)= x 2 f(x)= x 2 with its domain limited to [0.∞), [0.∞), which is a one-to-one function (it passes the horizontal line test) and has a reverse (square root function). If f(x)= (x−1) 2 f(x)= (x−1) 2 of [1,∞), [1,∞), the inverse function is f −1 (x)= x +1. f −1 (x)= x +1. Domain f f = range of f −1 f −1 = [1,∞). [1.∞). Domain f −1 f −1 = range f = [0.∞). [0.∞). Is it possible for a function to have more than one reverse? No. If two supposedly different functions, say, g g g and h, h, both meet the definition of being inverses of another function f, f, then you can prove that g = h. g = h. We have just seen that some features only have inverses if we limit the domain of the original feature. In these cases, there may be more than one way to limit the domain, leading to different inverses. However, on any domain, the original feature still has only one unique invers. The range of a function f(x) f(x) is the domain of the reverse function f −1 (x). f −1 (x). The domain f(x) f(x) is the range f −1 (x). f −1 (x). Given a feature, find the domain and scope of its reverse. If the function is one-to-one, type the range of the original function as the reverse domain and type the domain of the original function as the reverse scope. If the domain for the original function is to be restricted to make it one-to-one, then this restricted domain becomes the area of the reverse function. Identify which of the toolbox features beyond the square function is not one-to-one, and find a limited domain where each feature is one-to-one, if any. Toolbox features are reviewed Table 2. We limit the domain in such a way that the function assumes all y values exactly once. Constant identity Quadruple cubic corlic f(x)=c f(x)=x)=x f(x)=x f(x)= x 2 f(x)= x 2 f(x)= x 3 f(x)= x 3 f(x)= 1 x f (x)= 1 x Mutual square cube root Square root Absolute value f(x)= 1 x 2 f(x)= 1 x 2 f(x)= x 3 f(x)= x 3 f(x)= x f(x)= x f(x)=| x | f(x)=| x | The constant function is not one-to-one, and there is no domain (except a single point) where it could be one-on-one, so the constant function has no reverse. The absolute value function can be limited to the domain [0.∞), [0.∞), where it is equal to the identity function. The mutually squared function may be limited to the domain (0,∞). (0.∞). We can see that these features (if unlimited) are not one-to-one by looking at their graphs, shown in Figure 4. They both would fail the horizontal line test. However, if a feature is limited to a specific domain to pass the horizontal line test, it may have a reverse in the restricted domain. Figure 4 (a) Absolute value (b) Mutual square The domain for function f f is (1,∞) (1.∞) and function area f f f is (−∞,−2). (−∞,−2). Find the domain and scope of the inverse feature. When we have a one-to-one function, we can evaluate its inverse on specific reverse function inputs or construct a complete representation of the reverse function in many cases. Suppose we will find the inverse in a function that is represented in tabular form. Keep in mind that the domain of a feature is the area of the opposite and the area of the feature is the domain of the opposite. So we have to exchange domain and reach. Each row (or column) of entries becomes the row (or column) of output for the inverse function. Similarly, each row (or column) of outputs becomes the row (or column) of input for the inverse function. Table 3 lists a function f(t) f(t) showing the distance in miles travelled by a car in t t minutes. Find and interpret f −1 (70). f −1 (70). t(minutes) t(minutes) 30 50 70 90 f(t (t)(miles) f(t) (miles) 20 40 60 70 The reverse function takes an exit of f f and returns an entry to f. f. f. So in the term f −1 (70), f −1 (70), 70 is an output value of the original function representing 70 miles. The reverse will return the corresponding input of the original function f, f, 90 minutes, then f −1 (70)=90. f −1 (70)=90. The interpretation of this is that to run 70 miles, it took 90 minutes. Alternatively, keep in mind that the definition of the reverse was that if f(a)=b, f(a)=b, then f −1 (b)=a. f −1 (b)=a. By this definition, if we get f −1 (70)=a, f −1 (70)=a, then we are looking for a value a, then f (a)=70. f(a)=70. In this case, we are looking for a t t, then f (t)= 70, f (t)= 70, which is when t = 90. t=90. Using Table 4, you can (a) f(60), f(60) and (b) f −1 (60). f −1 (60). t(minutes) t(minutes) 30 50 60 70 90 f(t (miles) f(t) (miles) 20 40 50 60 70 We saw in Functions and Function notation that a function's domain can be read by observing the horizontal scale of the graph. We find the domain of the reverse function by observing the vertical extent of the graph for the original function, because this corresponds to the horizontal scope of the reverse function. Similarly, we find the range of the reverse function by observing the horizontal extent of the graph for the original function, as this is the vertical extent of the inverse function. If we want to evaluate a reverse function, we find its input within its domain, which is all or part of the vertical axis of the original function's graph. Given the graph of a function, evaluate its inverse at certain points. Find the input you want on the y-axis in the given graph. Read the inverse function output from the x-axis in the given graph. A function g(x) g(x) is specified in Figure 5. Find g(3) g(3) and g −1 (3). g −1 (3). To evaluate g(3), g(3), we find 3 on the x axis and find the corresponding output value on the y-axis. The entry (3,1) (3,1) tells us that g(3)=1. g(3)=1. To evaluate g −1 (3), g −1 (3), remember that g −1 (3) g −1 (3) by definition means the value of x for which g(x)=3. g(x)=3. By looking for the output value 3 on the vertical axis, we find the point (5,3) (5,3) on the graph, which means g(5)=3, g(5)=3, then by definition g −1 (3)=5. g −1 (3)=5. See Figure 6. Using the graph in Figure 6, (a) find g −1 (1), g −1 (1) and (b) estimate −g 1 (4). g −1 (4). Sometimes we will need to know a reverse function for all elements of its domain, not just a few. If the original function is given as a formula, for example, y y as a function of x-x- we can often find the inverse function by solving to achieve x x as a function of y. y. With a function represented by a formula, you need to find the opposite. Make sure f f is a one-to-one function. Fix for x. x. x. Exchange x x and y. y. Find a formula for the reverse function that gives Fahrenheit temperature as a function of Celsius temperature. C= 5 9 (F−32) C= 5 9 (F−32) C = 5 9 (F−32) C】 9 5 = F−32 F = 9 5 C+32 C = 5 9 (F−32) C】 9 5 = F−32 F = 9 5 C+32 By solving generally we have uncovered the reverse function. If C=h(F)= 5 9 (F−32), C=h(F)= 5 9 (F−32), then F= h −1 (C)= 9 5 C+32 F= h −1 (C)= 9 5 C+32 In this case we introduced a function h h to represent the conversion, because the input and output variables are descriptive, and writing C -1 C −1 can be confusing. Loose for x x in the form of y y given y= 1 3 (x−5). y= 1 3 (x−5). Find the inverse function f(x)= 2 x−3 +4. f(x)= 2 x−3 +4. y = 2 x−3 +4 Setting up an equation. y−4 = 2 x−3 Subtly 4 from both = 2 y−4 Multiply both sides by x−3and divide by y−4. x = 2 y−4 +3 Add 3 to both sides. y = 2 x−3 +4 Setting up an equation. y−4 = 2 x−3 Pull 4 from both sides. x−3 = 2 y−4 Multiply both sides by x−3and divide by y−4. x = 2 y−4 +3 Add 3 to both sides. So f −1 (y)= 2 y−4 +3 f −1 (y)= 2 y−4 +3 or f −1 (x)= 2 x−4 +3. f −1 (x)= 2 x−4 +3. The domain and range f f exclude values 3 and 4, respectively. f f and f −1 f −1 are equal at two points, but are not the same function as we can see by creating Table 5. x 1 2 5 f −1 (y) f −1 (y) f(x) f(x) 3 2 5 y Find the opposite of the function f(x)=2+ x−4 . f(x)=2+ x−4 . y = 2+ x−4 (y−2) 2 = x−4 x = (y−2) 2 +4 y = 2+ x−4 (y−2) 2 = x−4 x = (y−2) 2 +4 So f −1 (x)= (x−2) 2 +4. f −1 (x)= (x−2) 2 +4. The domain for f f is [4,∞). [4.∞). Note that the interval between f f is [2.∞], [2.∞] so this means that the domain of the reverse function f −1 f −1 is also [2.∞). [2.∞). The formula we found for f −1 (x) f −1 (x) appears to be valid for all real x. x. However, f −1 f −1 itself must have a reverse (f f), so we need to limit the domain f −1 f −1 to [2.∞) [2.∞) to make f −1 f −1 one-function. This domain f −1 f −1 is exactly the range of f. f. What is the opposite of the function f(x)=2− x ? f(x)=2− x ? Specify domains for both the feature and the inverse function. Now that we can find the opposite of a feature, we'll explore the graphs of features and their inverses. Let's return to the square function f(x)= x 2 f(x)= x 2 limited to the domain [0.∞), [0.∞), where this function is one-on-one, and graph it as in Figure 7. Figure 7 Square function with domain limited to [0, ∞). Limiting the domain to [0.∞) [0.∞) makes the function one-to-one (it will obviously pass the horizontal line test), so it has a reverse on this limited domain. We already know that the opposite of the toolbox square function is square root function, that is, f −1 (x)= x . f −1 (x)= x . What happens if we graph both f f f and f −1 f −1 on the same set of axes, using the x-x axis for input to both fand f −1? fand f −1? We note a separate relationship: the graph of f −1 (x) f −1 (x) is the graph of f(x) f(x) reflected on the diagonal line y=x, y=x, which we call the identity line, shown in Figure 8. Figure 8 Square and square root functions on the non-negative domain This relationship will be observed for all one-to-one functions because it is a result of the function and its reverse prey entries and outputs. This is similar to changing the roles of the vertical and horizontal axes. In view of the graph of f(x) f(x) in Figure 9, draw a graph of f −1 f −1 (x). This is a one-to-one feature, so we'll be able to outline a reverse. Note that the graph has an apparent domain of (0.∞) (0.∞) and range of (−∞.∞) (−∞.∞), so the reverse will have a domain of (−∞.∞) (−∞.∞) and range of (0.∞). (0.∞). If we reflect this graph of the line y=x, y=x, the point (1,0) (1.0) to (0.1) (0.1), and the point (4,2) (4,2) reflects to (2,4). (2,4). Sketching the opposite on the same axes as the original graph gives figure 10. Figure 10 Function and its inverse, showing reflection on the Character Graphs of functions f f and f −1 f −1 from example 8. Is there any function that equals its own reverse? Yes. If f= f −1 , f= f −1 , then f(f(x))=x, f(f(x))=x, and we can think of several functions that have this property. The identity function does, as does the reciprocal function, because any function f(x)=c−x, f(x)=c−x, where c c is a constant, also equals its own inverse. 3.7 Section Exercises 1. Describe why the horizontal line test is an effective way to determine whether a function is one-to-one? 2. Why do we limit the domain of the f(x)= x 2 f(x)= x 2 function to find the inverse of the feature? 3. Can a function be its own reverse? Explain. 4. Are one-to-one functions either always increasing or always declining? Why or why not? 5. How do you find the opposite of a function algebraic? 6. Show that the function f(x)=a−x f(x)=a−x is its own inverse for all real numbers a. a. For the following exercises, find f −1 (x) f −1 (x) for each function. 11. 12. f(x)= 2x+3 5x+4 f(x)= 2x+3 5x+4 For the following exercises, find a domain where each function f f is one-to-one and non-descending. Type the domain in interval notation. Then find the opposite of f f limited to this domain. 13. f(x)= (x+7) 2 f(x)= (x+7) 2 14th f(x)= (x−6) 2 f(x)= (x−6) 2 15. f(x)= x 2 −5 f(x)= x 2 −5 16. Given f(x)= x 2+x f(x)= x 2+x and g(x)= 2x 1−x : g(x)= 2x 1−x : (a)Find f(g(x)) f(g(x)) and g(f(x)). g(f(x)). (b) What does the answer tell us about the relationship between f(x) f(x) and g(x)? g(x)? For the following exercises, use the function composition to verify that f(x) f(x) and g(x) g(x) are inverse functions. 17. f(x)= x−1 3 f(x)= x−1 3 and g(x)= x 3 +1 g(x)= x 3 +1 18. f(x)=−3x+5 f(x)=−3x+5 and g(x)= x−5 −3 g(x)= x−5 −3 For the following exercises, use a graph tool to determine whether each function is one-to-one. 20. f(x)= 3x+1 3 f(x)= 3x+1 3 21. 22. f(x)= x 3 −27 f(x)= x 3 −27 For the following exercises, determine whether the graph represents a one-to-one function. 23. 24. For the following exercises, use the graph for f f shown in Figure 11. 26.27. Find f −1 (0). f −1 (0). 28. Fix f −1 (x)=0. f −1 (x)=0. For the following For example, you can use the one-to-one function graph shown in Figure 12. Sketch the graph for f −1 . f −1 . 30. Find f(6) and f −1 (2). f(6) and f −1 (2). 31. If the complete graph of f f is displayed, find the domain f. f. 32. If the complete graph of f f is displayed, find the area f. f. For the following exercises, evaluate or resolve, provided that the function f f is one-to-one. 33. If f(6)=7, f(6)=7, find f −1 (7). f −1 (7). 34. If f(3)=2, f(3)=2, find f −1 (2). f −1 (2). 35. If f −1 (−4)=−8, f −1 (−4)=−8, find f(−8). f(−8). 36. If f −1 (−2)=−1, f −1 (−2)=−1, find f(−1). f(−1). Use the values specified in to evaluate or resolve the following exercises. x 0 1 2 3 4 5 6 7 8 9 f(x) f(x) 8 0 7 4 2 6 5 9 1 38. Find f −1 (0). f −1 (0). 40. Fix f −1 (x)=7. f −1 (x)=7. 41. Use the table-shaped representation of f f in Table 7 to create a table for f −1 (x). f −1 (x). x x 3 6 9 13 14 f(x) f(x) 1 4 7 12 16 For the following exercises, find the inverse function. Then the graph function and its reverse. 42. 43. f(x)= x 3 −1 f(x)= x 3 −1 44. Find the inverse function f(x)= 1 x−1 . f(x)= 1 x−1 . Use a chart tool to find its domain and reach. Type the domain and area in interval notation. 45. If you want to convert from x x degrees Celsius to y y degrees Fahrenheit, we use the formula f (x)= 9 5 x+32. f(x)= 9 5 x+32. If it exists, locate the inverse function and explain its meaning. 46. Cirr com orbit of a circle C is a function of its radius indicated by C(r)=2πr. C(r)=2πr. Expression of the radius of a circle as a function of its circumference. Call this function r(C). r(C). Find r(36π) r(36π) and interpret its meaning. 47. A car is driving at a constant speed of 50 miles per hour. The distance the car moves in miles is a function of time, t, t, in hours given by d (t)=50t. d(t)=50t. Find the reverse function by expressing the journey time in terms of distance travelled. Call this function t(d). t,d). Find t(180) t(180) and interpret its meaning. Importance.