

# Section 2.2

## Solutions and Hints

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for the book:

Precalculus, Mathematics for Calculus 4<sup>th</sup> Edition  
by James Stewart, Lothar Redlin and Saleem Watson.

**42. Does the equation  $3x + 7y = 21$  define  $y$  as a function of  $x$ ?**

$$\begin{aligned}\text{Solve for } y: \quad 3x + 7y = 21 &\rightarrow 7y = 21 - 3x \\ &\rightarrow y = (21 - 3x) / 7 \\ &\rightarrow y = 3 - (3/7)x\end{aligned}$$

Observe that for any given value of  $x$  you obtain a unique value for  $y$ .  
So the equation DOES define  $y$  as a function of  $x$ .

**46. Does the equation  $x^2 + y = 9$  define  $y$  as a function of  $x$ ?**

$$\text{Solve for } y: \quad x^2 + y = 9 \quad \rightarrow y = 9 - x^2$$

Observe that for any given value of  $x$  you obtain a unique value for  $y$ .  
Thus the equation DOES define  $y$  as a function of  $x$

**76. The domestic postage rate for first class letters weighing 12 oz or less is 34 cents for a letter weighing 1 oz or less and 23 cents for each additional ounce (or part of an ounce). Express the postage  $P$  as a function of the weight  $x$  of a letter for  $0 < x \leq 12$ .**

$$P(x) = \begin{cases} 34 & 0 < x \leq 1 \\ 34 + 23 * \lceil x \rceil & 1 < x \leq 12 \end{cases}$$

Notice that  $\lceil x \rceil$  means ceiling of  $x$  which means you would always round  $x$  UP.  
So if  $x = 3.2$  you would round  $x$  to 4 and would have to pay  $34 + 24 * 4 = \$1.30$ .