

12. The time,  $t$ , required to do a job varies **inversely** as the number of people,  $p$ , working on it. It takes 5 people 32 hours to complete a certain job.

a) Find an equation that models this variation. (Don't forget to start with a legend for the variables used.)

y-variable: time to do the job,  $t$  (in hrs)

x-variable: number of people working job,  $p$

$$y = \frac{k}{x}, \text{ here}$$

$$t = \frac{k}{p}$$

$$32 = \frac{k}{5}$$

$$\frac{32}{1} = \frac{k}{5}$$

$$k = 160$$

$$t = \frac{160}{p}$$

b) Use the equation to determine the following: If the same job is to be completed in 20 hours, how many people need to work on it?

$$20 = \frac{160}{p}$$

$$\frac{20}{1} = \frac{160}{p}$$

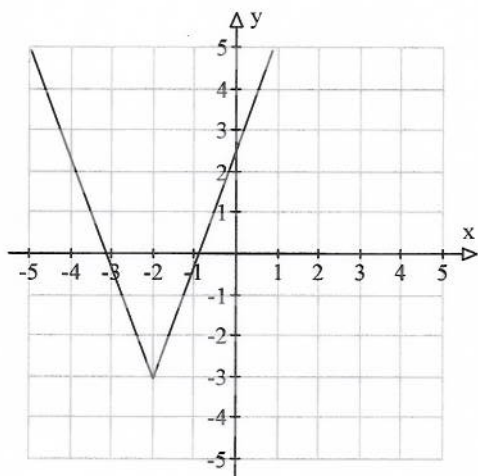
$$\frac{20p}{20} = \frac{160}{20}$$

$$p = 8$$

8 people will complete the job in 20 hrs.

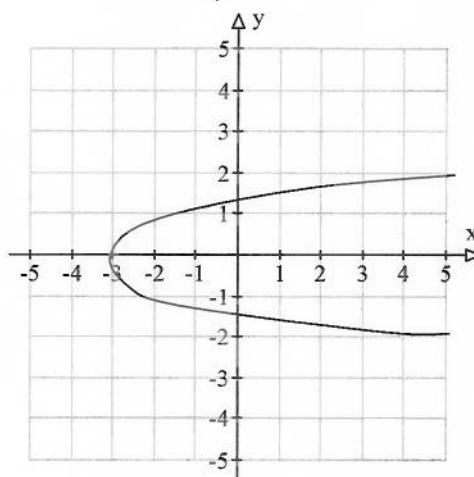
13. Is the following graph the graph of a function?

a)



yes, it is a function  
(it passes the vertical line test)

b)



no, it is not a function  
(it does not pass the vertical line test)