

Prof. Battaly
4999 Calc I

Assign: Study P3

Preliminary Chapter, Section 3

p. 27, 28 # 1, 5, 9, ...

33; 11, 31, 39, 43, 44, 57, 59

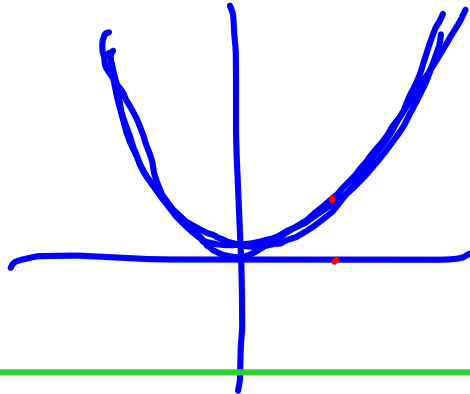
P.3 Functions.

P.19
 $y = f(x)$

y is a function of x if:
for every value of x in the domain
there exists **EXACTLY 1** value of y

Is y a function of x ?

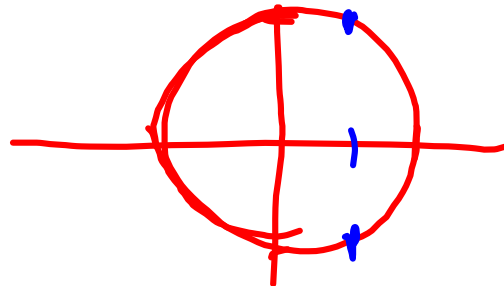
$$y = x^2$$



Use vertical line test.

Yes. For each value of x , there is exactly 1 value of y .

$$x^2 + y^2 = 25?$$



No. For at least one value of x , there is more than 1 value for y .

Domain of fns.

The Domain of a function includes all the possible values of x that result in a real number for y

$$y = \frac{1}{x-1} \quad D: x \neq 1 \\ (-\infty, 1) \cup (1, \infty)$$

Range: all y values.

p. 27 # 4

$$G: f(x) = \sqrt{x+3}$$

$$P: f(-2), f(6), f(-5)$$

$$f(x + \Delta x)$$

PLACE HOLDER

$$f(\quad) = \sqrt{(\quad)+3}$$

$$f(-2) = \sqrt{-2+3} = \sqrt{1} = 1$$

$$f(6) = \sqrt{6+3} = \sqrt{9} = 3$$

$$f(-5) = \sqrt{-5+3} = \sqrt{-2} \quad \text{⊗}$$

$$f(x) = \sqrt{x+3}$$

$$f(\quad) = \sqrt{(\quad)} + 3$$

$$f(x+\Delta x) = \sqrt{x+\Delta x+3}$$

$$\#6. G: g(x) = x^2(x-4)$$

$$g(\quad) = (\quad)^2 [\quad - 4]$$

$$a) F: g(4) = 4^2(4-4) \rightarrow 0$$

$$b) F: g\left(\frac{3}{2}\right) = \left(\frac{3}{2}\right)^2 \left(\frac{3}{2} - 4\right)$$

$$= \frac{9}{4} \cdot \left(\frac{3}{2} - \frac{8}{2}\right) = \frac{9}{4} \cdot \frac{-5}{2}$$

$$= -45/8$$

$$\#6. \text{ Given } g(x) = x^2(x-4)$$

$$F: g(t+4)$$

$$g(\quad) = (\quad)^2(\quad - 4)$$

$$g(t+4) = (t+4)^2((t+4)-4)$$
$$= (t^2 + 8t + 16)t$$

$$= t^3 + 8t^2 + 16t$$

p.28 #61

$$G. f(x) = \frac{3}{x}; g(x) = x^2 - 1$$

$$F: f(g(x)), g(f(x))$$

Composite Functions

$$f \circ g$$
$$f(x) = \frac{3}{x}$$

$$f(g(x)) = \frac{3}{x^2 - 1}$$
$$D: x \neq \pm 1$$

