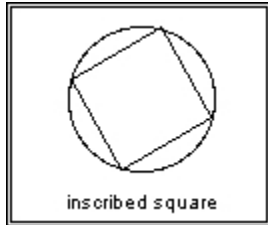


Calculus Readiness Test (functions)

Name: \_\_\_\_\_

1) A square is inscribed in a circle of radius  $r$ . Express the length of the side of the square in terms of  $r$ .

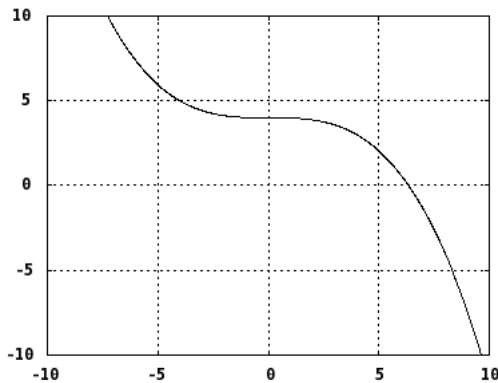


- a)  $r\sqrt{2}$       b)  $2r$       c)  $r$       d)  $r/2$       e) None of the above
- 

2) If  $f(x) = x^2 - 4x$ , then  $f(x + h) - f(x) =$

- a)  $f(h)$       b)  $h$       c)  $2hx + h^2 - 8x + 4h$       d)  $h^2 - 4h$       e)  $2hx + h^2 - 4h$
- 

3) The graph of  $y=f(x)$  is shown below.



Rank the following from smallest to largest.

$f^{-1}(5), f(5), f(0), f^{-1}(0)$

a)  $f^{-1}(5), f(5), f(0), f^{-1}(0)$

b)  $f(5), f^{-1}(5), f(0), f^{-1}(0)$

c)  $f^{-1}(5), f(0), f^{-1}(0), f(5)$

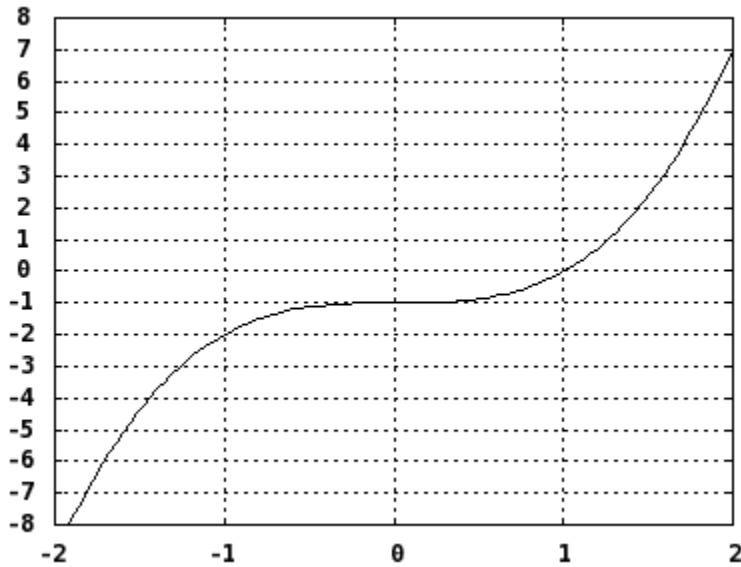
d)  $f^{-1}(0), f(0), f^{-1}(5), f(5)$

e) None of the above

4) As  $x$  increases from  $\pi/4$  to  $3\pi/2$ , the value of  $f(x)=\sin(2x)$ :

- a) increases at first, then decreases, then increases
  - b) increases throughout the interval
  - c) decreases throughout the interval
  - d) decreases at first, then increases, then decreases
  - e) none of the above
- 

5) Consider the graph of the function  $y = f(t)$  below. If  $f(z) = -2$  and  $f(x) = z$ , then  $x =$



- a) -2
  - b) -1
  - c) 0
  - d) 1
  - e) None of the above
- 

6) Given the table below determine  $f(g(3))$

- a) -2
- b) -1
- c) 0
- d) 3
- e) 4

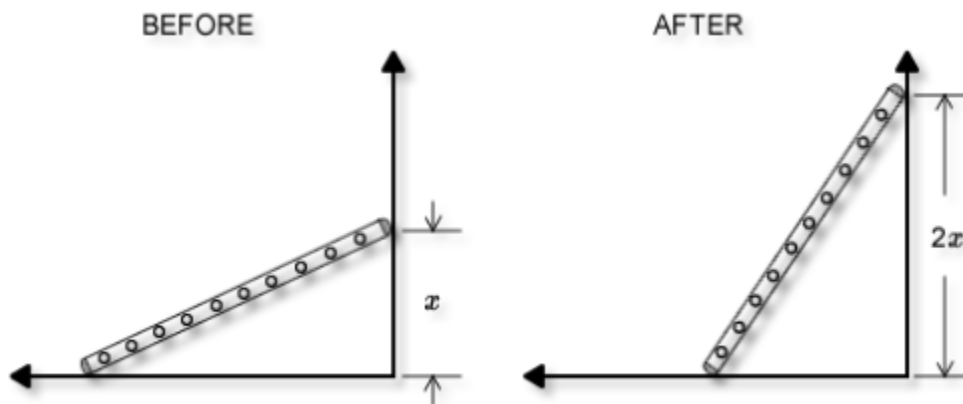
$x$	$f(x)$	$g(x)$
-2	0	5
-1	6	3
0	4	2
1	-1	1
2	3	-1
3	-2	0

7) Which of the following formulas defines the area,  $A$ , of a circle as a function of its circumference,  $C$ ?

- a.  $A = \frac{C^2}{4\pi}$
- b.  $A = \frac{C^2}{2}$
- c.  $A = (2\pi r)^2$
- d.  $A = \pi r^2$
- e.  $A = \pi\left(\frac{1}{4}C^2\right)$

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8) A ladder that is leaning against a wall is adjusted so that the distance of the top of the ladder from the floor is twice as high as it was before it was adjusted.



The slope of the adjusted ladder is:

- a. Less than twice what it was
- b. Exactly twice what it was
- c. More than twice what it was
- d. The same as what it was before
- e. There is not enough information to determine if any of a through d is correct.

