Math 010 Practice Problems for Test 2 Fall 2022

The following are examples of potential exam questions. It is recommended that you show all work while doing these problems. No problem requires a calculator but you are welcome to use one.

1. Mid point and distance
   Examples:

   (a) Compute the mid point and the distance of these two points $(0, 0)$ and $(2, 0)$

   (b) Compute the mid point and the distance of these two points $(1, 1)$ and $(2, 2)$

   (c) Compute the mid point and the distance of these two points $(-5, 3)$ and $(3, -7)$

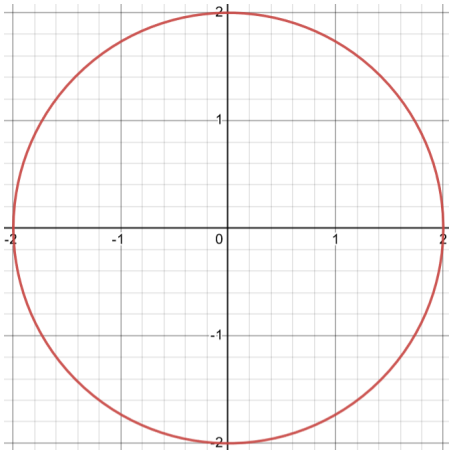
2. Distinguish between functions and relations using the Vertical Line Test
   Examples:

(a) Determine if the relation is a function $(1, 2), (2, 2), (3, 2), (4, 2)$

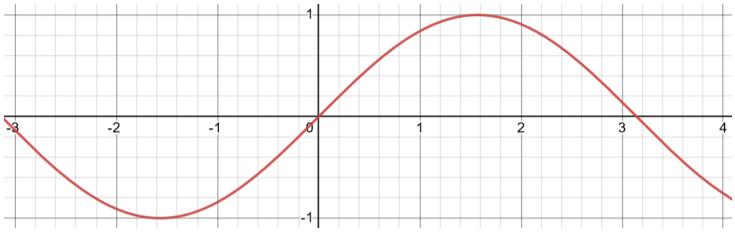
(b) Determine if the relation is a function $(2, 1), (2, 2), (2, 3), (2, 4)$

(c) Determine if the relation is a function $(1, 2), (3, 5), (5, 3), (7, 7)$

(d) Determine if the picture below is a function.

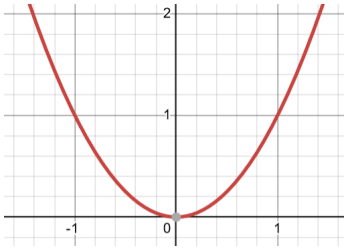


(e) Determine if the picture below is a function.

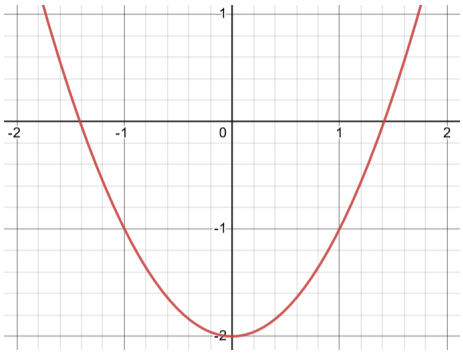


3. Identify the domain and range of a function
   Examples:

   (a) Determine the domain and range of this function.



   (b) Determine the domain and range of this function.



   (c) Determine the domain and range of this function.
   $f(x) = \sqrt{x} - 3$

(d) Determine the domain and range of this function.
$f(x) = (x + 4)^2 - 3$

4. Graphing functions
Examples:

(a) Graph using a table and describe the shift from the parent function:
$f(x) = (x - 3)^2 - 2$

(b) Graph using a table and describe the shift from the parent function:
$f(x) = |x + 2| + 3$

(c) Graph using a table and describe the shift from the parent function:
$f(x) = \sqrt{x - 2} + 3$

5. Solving linear equations
   Examples:

   (a) Solve for x: $4(x-2)=12$

   (b) Solve for x: $12+2(5-3x)=-9(x-1)-2$

   (c) Solve for x: $\frac{1}{4}x+\frac{1}{2}=-\frac{3}{4}$

   (d) Solve for x: $\frac{1}{2}x+\frac{3}{8}=\frac{3}{4}$

6. Graphing a linear function using slope and y-intercept
   Examples:

   (a) Graph $f(x) = 5$ using slope and y-intercept

   (b) Graph $f(x) = x + 2$ using slope and y-intercept

   (c) Graph $f(x) = 3x - 4$ using slope and y-intercept

   (d) Graph $f(x) = -2x + 1$ using slope and y-intercept

7. Finding the slope
   Examples:

   (a) Find the slope between $(0, 0)$ and $(2, 0)$

   (b) Find the slope between $(1, 1)$ and $(2, 2)$

   (c) Find the slope between $(-5, 3)$ and $(3, -7)$

   (d) Find the slope between $(2, 1)$ and $(4, 6)$

8. Slope intercept
   Examples:

   (a) Find the equation of a line in slope-intercept form with slope $\frac{1}{3}$ and going through the point $(0, -6)$.

   (b) Find the equation of a line in slope-intercept form with slope 2 and going through the point $(1, 3)$.

   (c) Find the equation of a line in slope-intercept form with slope $-\frac{5}{2}$ and going through the point $(2, 7)$.

   (d) Find the equation of a line in slope-intercept form with slope -3 and going through the point $(4, -7)$.

9. Parallel and perpendicular lines
   Examples:

   (a) Find the equation of the line parallel to $y = 2x + 1$ and containing the point $(0, 0)$

   (b) Find the equation of the line parallel to $6x - 3y = 9$ and containing the point $(0, -4)$

   (c) Find the equation of the line perpendicular to $y = 3x + 1$ and containing the point $(0, 3)$.

   (d) Find the equation of the line perpendicular to $x + 5y = -10$ and containing the point $(0, -2)$.