MAT 1033C
Practice for Exam
3.2, 3.6, 3.7, 8.4

Name: _____
Date: _____
Section: _____

You MUST show your work to receive full credit. This exam is worth 100 points. Good Luck!

1 point each

① Complete the following chart:

$y = 2x^2 + 1$

$y = -3(x-2)^3 + 1$

$y = \frac{1}{2}(x+4)^2 - 3$

$y = |x-3| + 2$

$y = x^3 - 8$

| shape | a vertex or "vertex" | U D opens up/down | W N S wide narro Stand |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

4 pts each

② Sketch a graph for each of the following functions. (Indicate all important informatio to create a good graph.)

(a) $y = -(x+4)^2 - 2$

(b) $y = x^3 + 4$

(c) $y = -2|x-1| + 3$

(3) Complete the following chart:

1 point each

| | "vertex" | up or down | left or right |
|---|---|---|---|
| $y = -2\sqrt{x-1} + 3$ | | | |
| $y = \frac{1}{2}\sqrt{2-x} + 6$ | | | |
| $y = -3\sqrt{6-x} + 1$ | | | |
| $y = 4\sqrt{x+2} - 3$ | | | |

(4) Graph each function:

a) $y = \sqrt{x+3} - 6$

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

4 points each

(5) Determine whether each relation represents a function. Also, find the domain and range for each relation.

2 points per part

(a) $\{(1,2), (3,4), (5,6), (6,7), (7,6)\}$

function: yes or no
domain:
range:

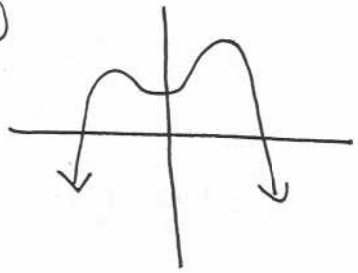
(b) $\{(2,1), (2,2), (2,3), (2,4)\}$

function: yes or no
domain:
range:

⑥ Determine if each graph represents a function:

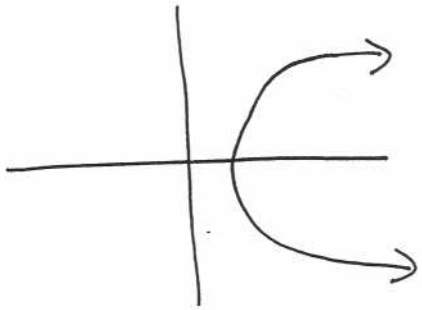
2 points each

ⓐ



yes or no

ⓑ



yes or no

⑦ Determine if each equation represents a function:

2 points each

a) $f(x) = x^2 - 6$ yes or no

b) $x^2 + 3y^2 = 7$ yes or no

c) $y = \sqrt{x} - 4$ yes or no

⑧ Determine the domain & range of each function:

2 points per part

a) $f(x) = x^3 + 5$ D:
R:

b) $f(x) = (x-2)^2 + 1$ D:
R:

c) $f(x) = \sqrt{x-1} + 4$ D:
R:

⑨ Let $f(x) = x^2 + 3x - 2$ and $g(x) = 5x + 1$

Evaluate:

a) $f(2)$

2 points each

b) $g(3)$

c) $f(4) - g(3)$

d) $f(z)$

⑩ Let $f(x) = \begin{cases} 2x - 4 & \text{if } x \geq 3 \\ x^2 + 1 & \text{if } x < 3 \end{cases}$

2 points each

find ⓐ $f(5)$

ⓑ $f(3)$

Bonus Problem

Let $f(x) = 2x^2 - 3x + 4$

Find $f(x-3)$

4 points all or nothing