

Name:

MATH 163, Test #1

(SHOW ALL WORK)

\* Solve each equation & inequality using interval notation when needed.

①  $|3x - 6| = 12$

②  $|-2x - 8| + 2 = 2$

③  $|-3x + 9| - 4 \geq 2$

④  $|5x - 8| + 5 \geq 3$

$$\textcircled{5} \quad 2|5x-4| + 1 \leq 9$$

\* Evaluate each function at the given value

$$\textcircled{6} \quad f(-3) =$$

$$f(x) = 3x^2 - 4x + 1$$

$$\textcircled{7} \quad g(-2) =$$

$$g(x) = | -5x - 2 |$$

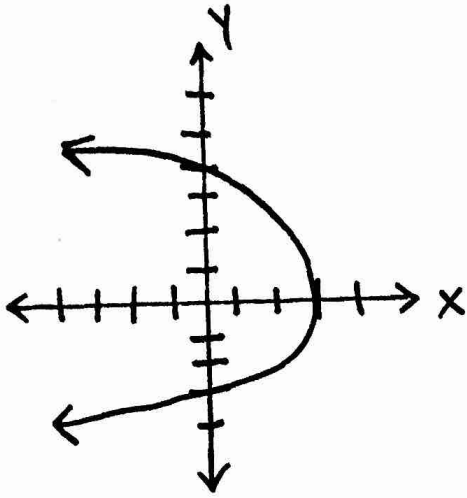
$$\textcircled{8} \quad f(4) - g(6) =$$

\* State the domain & range of the relation & explain why it is or is not a function.

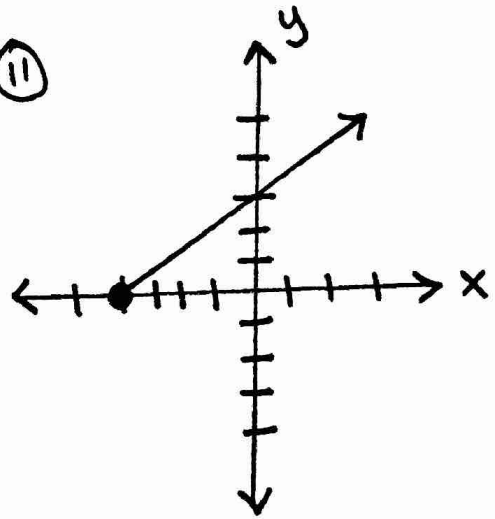
$$\textcircled{9} \quad \{ (4, 8), (6, 8), (8, 8), (5, 4), (-8, 4) \}$$

\* State the domain & range of each relation graphed below:

⑩



⑪



\* Find the vertex of each parabola & state if it is a max/min.

⑫  $f(x) = 2x^2 - 4x + 5$

⑬  $g(x) = 4x^2 + 4x - 3$

\* Describe the type of transformation that takes place from  $f(x) \rightarrow g(x)$ .

$$\textcircled{14} \quad f(x) = x^2$$
$$g(x) = (x-3)^2 + 4$$

$$\textcircled{15} \quad f(x) = x^2$$
$$g(x) = -(x+2)^2 + 5$$

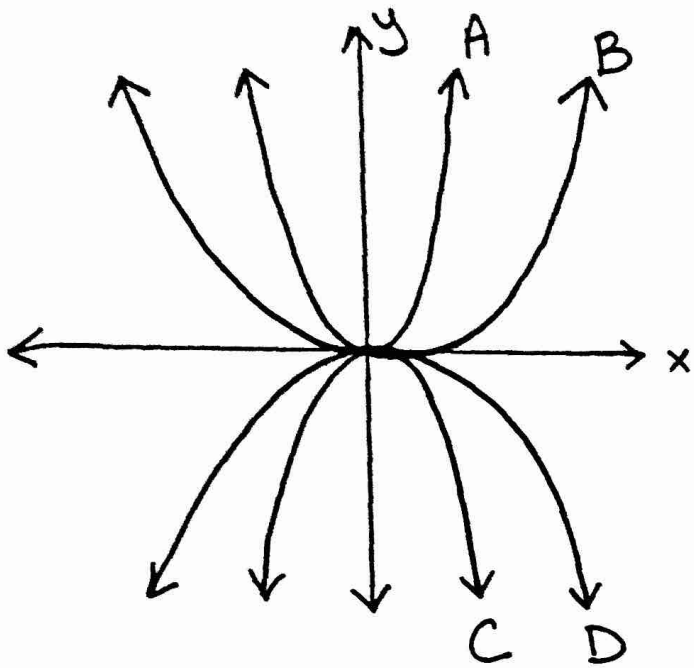
$$\textcircled{16} \quad f(x) = (x+2)^2 - 4$$
$$g(x) = (x-3)^2 - 7$$

\* Rewrite each function in vertex form, then state the vertex  
( $f(x) = a(x-h)^2 + k$ )

$$\textcircled{17} \quad f(x) = x^2 + 4x - 3$$

$$\textcircled{18} \quad f(x) = 3x^2 - 12x + 2$$

19) Match the graph with its function:



$$f(x) = \frac{1}{2}x^2 \quad \underline{\hspace{2cm}}$$

$$g(x) = -3x^2 \quad \underline{\hspace{2cm}}$$

$$h(x) = 4x^2 \quad \underline{\hspace{2cm}}$$

$$i(x) = -\frac{1}{3}x^2 \quad \underline{\hspace{2cm}}$$

\* Solve each equation for x: (REVIEW)

20)  $x^2 - 8x + 12 = 0$

21)  $2x^2 + 5x - 12 = 0$

22)  $-5(2x - 3) + 2x + 3 = 2x - 38$

\* The table below shows the amount of hours a person studied for a test and their test score.

# of hours	test score
0	62
1	68
1.5	72
2.5	73
3	84
5	95

②③ Write the equation for the least-square regression line that best fits the data.

②④ If someone studied 3.5 hours use the linear regression equation to predict their test score.