MA109 — College Algebra Fall 2018
Exam 1 2018-09-19

Name: _____ **Sec.:** _____

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GOOD LUCK!

1.	a	b	c	d	e	**11.**	a	b	c	d	e
2.	a	b	c	d	e	**12.**	a	b	c	d	e
3.	a	b	c	d	e	**13.**	a	b	c	d	e
4.	a	b	c	d	e	**14.**	a	b	c	d	e
5.	a	b	c	d	e	**15.**	a	b	c	d	e
6.	a	b	c	d	e	**16.**	a	b	c	d	e
7.	a	b	c	d	e	**17.**	a	b	c	d	e
8.	a	b	c	d	e	**18.**	a	b	c	d	e
9.	a	b	c	d	e	**19.**	a	b	c	d	e
10.	a	b	c	d	e	**20.**	a	b	c	d	e

For grading use:

Number Correct	
	(out of 20 problems)

Total	
	(out of 100 points)

Name: _____

Multiple Choice Questions

Show all your work on the page where the question appears.
Clearly mark your answer both on the cover page on this exam
and in the corresponding questions that follow.

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1. The point $(11, 2)$ is on the graph of which of these equations?

   Possibilities:

   (a) $(y + x)^2 = (2)^2 + (11)^2$

   (b) $y = 11x + 2$

   (c) $y + 2 = 3(x + 11)$

   (d) $y = 3x - 31$

   (e) $2y = 11x$

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2. A line has slope 17 and goes through the point $(2, 3)$. What is its y-intercept?

   Possibilities:

   (a) -34

   (b) 1

   (c) 3

   (d) 31

   (e) -31

---

3. Let

$$p(x) = \begin{cases} 2x & \text{if } x < 11 \\ 3x + 1 & \text{if } x \geq 11 \end{cases}$$

   Find $p\,(11)$

   Possibilities:

   (a) 11

   (b) $3x + 1$

   (c) 34

   (d) 22

   (e) 56

---

4. Find an equation for the line through $(7, 2)$ and $(9, 3)$.

Possibilities:

(a) $y = \frac{5}{16}x + 2$

(b) $y - 3 = \frac{1}{2}(x - 9)$

(c) $y - 2 = \frac{6}{5}(x - 9)$

(d) $y - 2 = \frac{6}{5}(x - 7)$

(e) $y - 3 = \frac{1}{2}(x - 7)$

5. Find the average rate of change between $x = -8$ and $x = -4$ of $f(x) = \dfrac{3}{x + 9}$

Possibilities:

(a) $-\frac{3}{10}$

(b) $\frac{12}{5}$

(c) 5

(d) $-\frac{3}{5}$

(e) 4

6. Let $f(x) = 9x + 3$. Compute $\dfrac{f(w) - f(x)}{w - x}$

Possibilities:

(a) $\dfrac{9(w - x) + 6}{w - x}$

(b) $9x - 9w + 3$

(c) 1

(d) $9 + h$

(e) 9

7. Let $f(x) = x^2 + 9$. Compute $\dfrac{f(x + h) - f(x)}{h}$

Possibilities:

(a) $9x + h$

(b) $2x + 9 + h$

(c) $\dfrac{9 + h}{h}$

(d) $2x + h$

(e) $\dfrac{h^2 + 18}{h}$

8. A motel charges a deposit fee of $100 upon arrival, and then $180 per night. If a visitor stays for 6 nights, how much will they pay for the stay?

Possibilities:

(a) $780

(b) $600

(c) $1,180

(d) $1,680

(e) $840

9. At a "university mixer," there is a room full of 40 people, either first-year students or returning students. Currently, $\frac{1}{2}$, that is 50%, of them are first-year students, and the rest are returning students. How many more returning students would need to enter the room so that first-year students make up only $\frac{1}{5}$, that is 20%, of the resulting mixture of people?

Possibilities:

(a) 60 returning students

(b) 8 returning students

(c) 12 returning students

(d) 20 returning students

(e) 32 returning students

10. A rectangular sign is twice as wide as it is tall. The perimeter of the sign needs to be covered in a special material. Which of the following equations best describes the perimeter of the rectangular sign in terms of its width?

Possibilities:

(a) $P = 3W$

(b) $P = \sqrt{W^2 + 2}$

(c) $P = 4W$

(d) $P = 6W$

(e) $P = 2W^2$

11. Which of these equations says "x is the number where $(7, 4)$ is the midpoint of $(x, 6)$ and $(9, 2)$"?

Possibilities:

(a) $(7)^2 + (4)^2 = (x - 6)^2 + (9 - 2)^2$

(b) $x = \dfrac{2 - 4}{9 - 7}$

(c) $7 = x - 9$

(d) $\dfrac{4}{7} = \dfrac{2 - 6}{9 - x}$

(e) $7 = \dfrac{x + 9}{2}$

12. Find the domain of $\sqrt{64-x}$ in interval notation.

Possibilities:

(a) $(-\infty, 8)$

(b) $(-\infty, 64]$

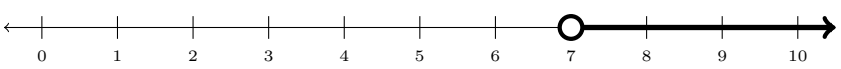
(c) $(-\infty, \infty)$

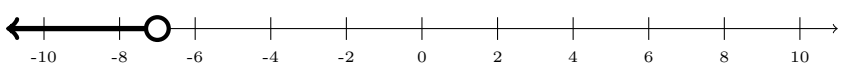
(d) $[64, \infty)$

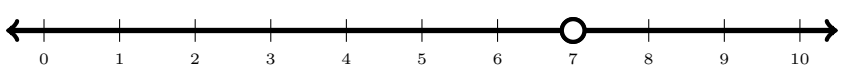
(e) $(8, \infty)$

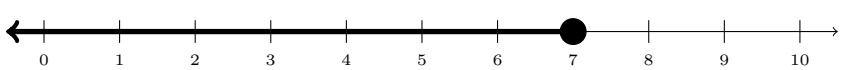
13. Find the domain of $f(x) = \dfrac{1}{7-x}$.

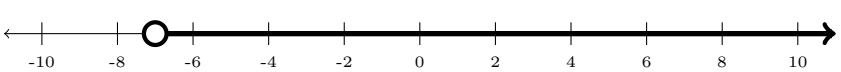
Possibilities:

(a) 

(b) 

(c) 

(d) 

(e) 

14. Solve $3x - 6 < -9$

Possibilities:

(a) $(-\infty, 1]$

(b) $(1, \infty)$

(c) $[-1, \infty)$

(d) $(-\infty, -1)$

(e) $(-\infty, -1) \cup (-1, \infty)$

15. Solve $2x + 5 \geq 6x - 3$

Possibilities:

(a) $(2, \infty)$

(b) $(-\infty, -2) \cup (-2, \infty)$

(c) $(-\infty, -2)$

(d) $[-2, \infty)$

(e) $(-\infty, 2]$

16. Find a linear function $f(x) = mx + b$ such that $f(2) = 38$ and $f(7) = 88$.

Possibilities:

(a) $f(x) = 10x + 18$

(b) $f(x) = 2x + 38$

(c) $f(x) = \frac{88}{7}x + 2$

(d) $f(x) = \frac{9}{4}x + \frac{67}{2}$

(e) $f(x) = 19x + 88$

17. Let $f(x) = 2x - 3$ and solve $f(x) = 5$.

Possibilities:

(a) $x = 5$

(b) $x = -3$

(c) $x = 4$

(d) $x = 7$

(e) $x = \frac{3}{2}$

18. The graph on the right defines y as a function of x. An input of 2 results in what output?

Possibilities:

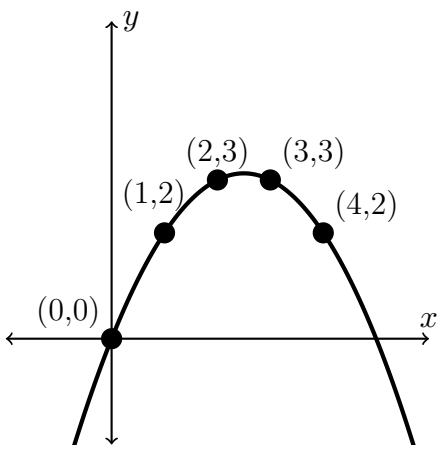
(a) $y = 3$

(b) $y = 2$

(c) $y = 4$

(d) $y = 0$

(e) $y = 1$



19. The graph from #18 defines y as a function of x. What input(s) result in an output of 2?

Possibilities:

(a) $x = 2$ only

(b) $x = 1$ and $x = 4$

(c) $x = 2$ and $x = 3$

(d) $x = 0$ only

(e) $x = 3$ only

20. The graph from #18 defines y as a function of x. What is the average rate of change of this function from $x = 1$ to $x = 3$?

Possibilities:

(a) $m = 1$

(b) $m = \frac{1}{2}$

(c) $m = 2$

(d) $m = 3$

(e) $m = 5$

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