MA109 — College Algebra Spring 2017
Exam1 2017-02-08

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. Simplify the expression. $14 - 9 \cdot 6^2$

   Possibilities:

   (a) 338
   (b) -310
   (c) 900
   (d) -2902
   (e) -94

---

2. What is the first operation applied to x in the following expression? $6 - (x + 9)^5$

   Possibilities:

   (a) Subtract it from 6
   (b) Multiply by -1
   (c) Raise it to the 5th power
   (d) Take the 5th root
   (e) Add 9

---

3. Simplify the expression without using a calculator. Your answer should not have any radicals in it.

$$\sqrt{20}\sqrt{245}$$

   Possibilities:

   (a) 70
   (b) 14
   (c) 4900
   (d) 350
   (e) 265

---

4. Find the distance between $-\frac{9}{11}$ and 6

Possibilities:

(a) $\frac{75}{22}$

(b) $-\frac{57}{11}$

(c) $\frac{75}{11}$

(d) $\frac{57}{11}$

(e) $\frac{57}{22}$

---

5. Simplify, and write the given number without using absolute values. $|\sqrt{7}-5|$

Possibilities:

(a) $5+\sqrt{7}$

(b) $\sqrt{7}-5$

(c) 18

(d) $5-\sqrt{7}$

(e) $-5-\sqrt{7}$

---

6. Solve for x in the equation $|8-x| = 4+3x$

Possibilities:

(a) $-\frac{5}{2}$ only

(b) 1 and -6

(c) No real solutions.

(d) -6 only

(e) 1 only

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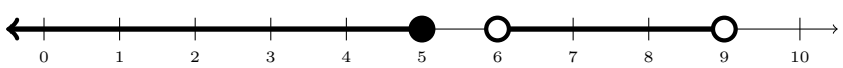
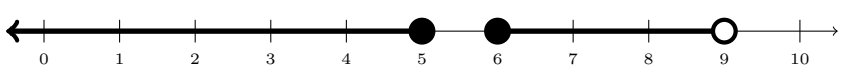
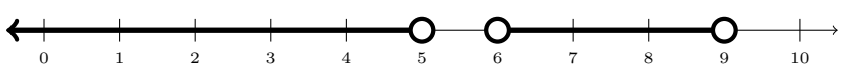
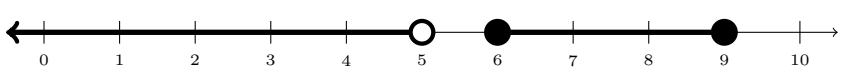
7. Which of the following number lines represents the union of intervals $(-\infty, 5] \cup (6, 9)$

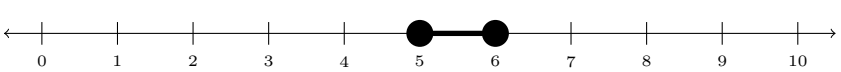
Possibilities:

(a) 

(b) 

(c) 

(d) 

(e) 

8. Solve the equation for L. $A = b \cdot \dfrac{L + R}{2}$

Possibilities:

(a) $L = \dfrac{2A + b}{Rb}$

(b) $L = \dfrac{2A}{b} - R$

(c) $L = \dfrac{2A - Rb}{Rb}$

(d) $L = \dfrac{2bA - Rb}{2}$

(e) $L = \dfrac{A + 2Rb}{b}$

9. Solve the equation. $(x + 7)^4 - 58 = 23$

Possibilities:

(a) 60 and 56

(b) 2343 and -2459

(c) 2343 and -2343

(d) -4 and -10

(e) 809942 and -810058

10. Solve for x in $\dfrac{7}{x-3} + \dfrac{12}{x-4} = \dfrac{9}{(x-3)(x-4)}$

Possibilities:

(a) 3 and 4

(b) $\frac{9}{7}$ and $\frac{3}{4}$

(c) $\sqrt{7}$ and $-\sqrt{7}$

(d) $\frac{9}{19}$ only

(e) $\frac{73}{19}$ only

---

11. Solve for x by completing the square in $x^2 + 2\pi x - 11 = 0$

Possibilities:

(a) $11 - \pi$

(b) $-\pi \pm \sqrt{\pi^2 + 11}$

(c) $\frac{11}{1+\pi}$

(d) $\sqrt{11 - \pi}$

(e) $\frac{11 \pm \sqrt{19^2 - \pi}}{2}$

---

12. Find a number k such that the equation $x^2 + kx + 13 = 0$ has exactly one real solution.

Possibilities:

(a) $\frac{169}{4}$

(b) $\pm\sqrt{13}$

(c) $\pm 2\sqrt{13}$

(d) $\frac{\pm\sqrt{13}}{2}$

(e) 169

---

13. Find all distinct, real solutions x to $x^6 - 22x^3 - 7 = 0$.
Hint: You may want to complete the square, or simplify a root/fraction before finishing the problem.

Possibilities:

(a) $\pm\sqrt[3]{11 \pm \sqrt{128}}$

(b) $\sqrt[3]{11 \pm \sqrt{128}}$

(c) $\pm\sqrt{11 + \sqrt[3]{128}}$

(d) $\pm\sqrt{11 \pm \sqrt[3]{128}}$

(e) $\pm\sqrt[3]{11 \pm \sqrt[3]{128}}$

---

14. Find all distinct, real solutions x to $\left(x^2 - 5\right)(x - 8)(x - 4) = 0$.

Possibilities:

(a) $x = -5$, $x = -8$, and $x = -4$

(b) $x = 5$, $x = 8$, and $x = 4$

(c) $x = \pm\sqrt{5}$, $x = 8$, and $x = 4$

(d) $x = \pm\sqrt{5}$, $x = -8$, and $x = -4$

(e) No solution

---

15. Solve for x in the equation $\sqrt{8x + 81} = x + 6$

Possibilities:

(a) -4 only

(b) No real solutions.

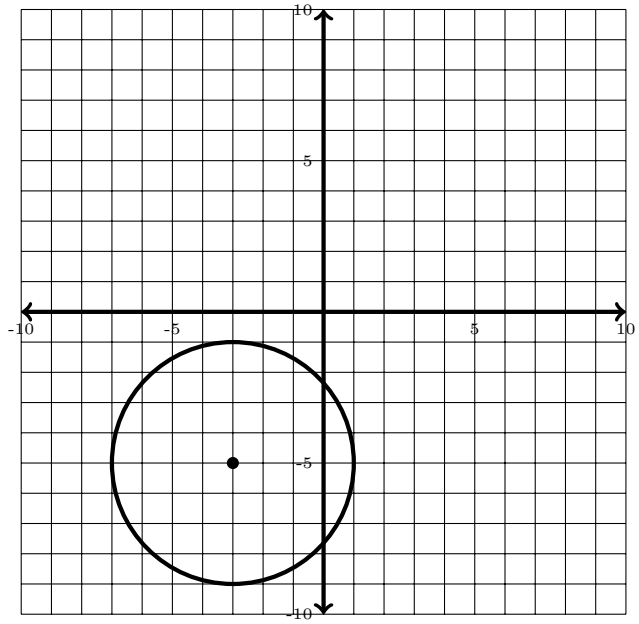
(c) -9 only

(d) 5 only

(e) -9 and 5

---

16. Find an equation for the circle shown below:



Possibilities:

(a) $(x+3)^2+(y-5)^2=4$

(b) $(x+6)^2+(y-10)^2=-16$

(c) $(x+3)^2+(y+5)^2=16$

(d) $(x-3)^2+(y-5)^2=16$

(e) $(x-3)^2+(y+5)^2=4$

17. The graph of $x^2+y^2-12x-18y+92=0$ is a circle. Find its center and its radius.

Possibilities:

(a) Radius: 5 Center: $(-6,-9)$

(b) Radius: $2\sqrt{23}$ Center: $(6,9)$

(c) Radius: 10 Center: $(12,18)$

(d) Radius: $2\sqrt{23}$ Center: $(-6,-9)$

(e) Radius: 5 Center: $(6,9)$

18. What is the distance between $(5, 8)$ and $(4, 3)$?

Possibilities:

(a) $\sqrt{26}$

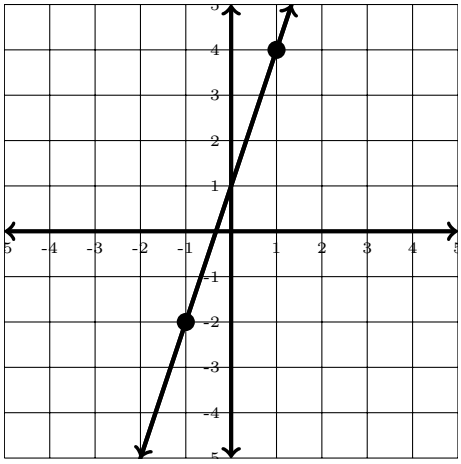
(b) 5

(c) 1

(d) $\sqrt{202}$

(e) $\sqrt{10}$

19. Find the slope of the line in the graph.



Possibilities:

(a) $-\frac{1}{3}$

(b) -3

(c) $\frac{1}{3}$

(d) 3

(e) The slope is not defined.

20. Find an equation for the line through the points $(6, 9)$ and $(5, 4)$.

Possibilities:

(a) $y - 9 = 5(x - 6)$

(b) $y - 9 = \frac{1}{5}(x - 6)$

(c) $y + 9 = 5(x + 6)$

(d) $y = -\frac{1}{5}(x - 6) - 9$

(e) $y + 9 = \frac{1}{5}(x + 6)$

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