

St. Ambrose University  
Department of Mathematics  
Math 151 Exam I

Name \_\_\_\_\_

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question. ( 5 pts each )

Find the slope-intercept form of the line through the given points.

1) (-3, 5) and (8, 0)

A)  $y = \frac{5}{11}x + \frac{40}{11}$

B)  $y = 1x + 8$

C)  $y = -\frac{5}{11}x + \frac{40}{11}$

D)  $y = -1x + 8$

1) \_\_\_\_\_

Provide an appropriate response.

2) In the linear function,  $y = a + fx$ , "a" is the \_\_\_ of the function.

A) slope

B) first degree term

C) rise over run

D)  $f(0)$

2) \_\_\_\_\_

Find the center and radius of the circle.

3)  $(x - 6)^2 + (y + 9)^2 = 16$

A) (-6, 9),  $r = 16$

B) (6, -9),  $r = 4$

C) (9, -6),  $r = 16$

D) (-9, 6),  $r = 4$

3) \_\_\_\_\_

Find the slope of the line described.

4) Through  $(-4, 17)$  and  $(15, -1)$

A)  $-\frac{18}{19}$

B)  $\frac{16}{11}$

C)  $\frac{18}{19}$

D)  $-\frac{19}{18}$

4) \_\_\_\_\_

Determine the equation of the line described. Put answer in the slope-intercept form, if possible.

5) Through  $(4, -1)$ , parallel to  $7x + 5y = 3$

A)  $y = -\frac{7}{5}x + \frac{23}{5}$

B)  $y = -\frac{4}{5}x + \frac{3}{5}$

C)  $y = -\frac{5}{7}x - \frac{1}{7}$

D)  $y = \frac{7}{5}x - \frac{23}{5}$

5) \_\_\_\_\_

Solve the equation by factoring.

6)  $x^2 - 8x + 15 = 0$

A)  $\{5, -3\}$

B)  $\{5, 3\}$

C)  $\{-5, -3\}$

D)  $\{-5, 3\}$

6) \_\_\_\_\_

7)  $3x^2 + 2x - 8 = 0$

A)  $\{-\frac{4}{3}, 2\}$

B)  $\{-\frac{4}{3}, -2\}$

C)  $\{\frac{4}{3}, -2\}$

D)  $\{\frac{4}{3}, 2\}$

7) \_\_\_\_\_

Find the real solutions, if any, of the equation. Use the quadratic formula.

8)  $5x^2 = -12x - 6$

A)  $\left\{ \frac{-6 - \sqrt{6}}{10}, \frac{-6 + \sqrt{6}}{10} \right\}$

C)  $\left\{ \frac{-6 - \sqrt{6}}{5}, \frac{-6 + \sqrt{6}}{5} \right\}$

B)  $\left\{ \frac{-6 - \sqrt{66}}{5}, \frac{-6 + \sqrt{66}}{5} \right\}$

D)  $\left\{ \frac{-12 - \sqrt{6}}{5}, \frac{-12 + \sqrt{6}}{5} \right\}$

8) \_\_\_\_\_

Write the expression in the standard form  $a + bi$ .

9)  $(4 + 9i)(2 - 5i)$

A)  $53 - 2i$

B)  $-37 + 38i$

C)  $53 + 2i$

D)  $-45i^2 - 2i + 8$

9) \_\_\_\_\_

Solve the equation in the complex number system.

10)  $x^4 - 6x^2 - 7 = 0$

A)  $\{\sqrt{7}, 7\}$

B)  $\{\sqrt{7}i, i\}$

C)  $\{-\sqrt{7}, \sqrt{7}, i, -i\}$

D)  $\{-\sqrt{7}i, -i\}$

10) \_\_\_\_\_

Find the real solutions of the equation.

11)  $\sqrt{3x + 40} = x$

A)  $\{-5, 8\}$

B)  $\{-20\}$

C)  $\{8\}$

D) no real solution

11) \_\_\_\_\_

12)  $(x^2 - 6)^{1/2} = 5$

A)  $\{\sqrt{31}, -\sqrt{31}\}$

B)  $\{11\}$

C)  $\{\sqrt{11}\}$

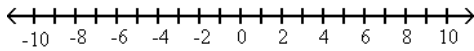
D)  $\{31, -31\}$

12) \_\_\_\_\_

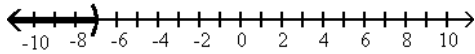
Solve the inequality. Express your answer using interval notation. Graph the solution set.

13)  $8 - 2(3 - x) \leq -12$

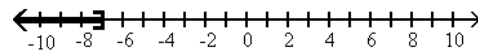
13) \_\_\_\_\_



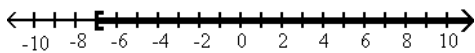
A)  $(-\infty, -7)$



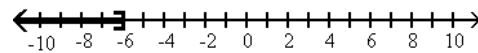
B)  $(-\infty, -7]$



C)  $[-7, \infty)$

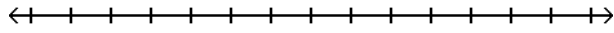


D)  $(-\infty, -6]$

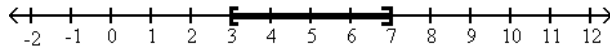


14)  $-17 \leq -3x + 4 \leq -5$

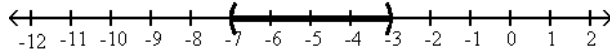
14) \_\_\_\_\_



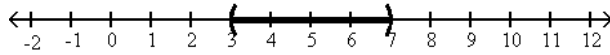
A)  $[3, 7]$



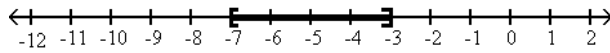
B)  $(-7, -3)$



C)  $(3, 7)$



D)  $[-7, -3]$



Solve the equation.

15)  $|8x + 4| + 5 = 7$

15) \_\_\_\_\_

A)  $\{\frac{1}{4}, \frac{3}{4}\}$

B)  $\{-\frac{1}{2}, -\frac{3}{2}\}$

C)  $\{-\frac{1}{4}, -\frac{3}{4}\}$

D) no solution

Solve the inequality. Express your answer using interval notation. Graph the solution set.

16)  $|5x - 1| \geq 5$

A)  $[-\frac{4}{5}, \frac{6}{5}]$

C)  $(-\frac{4}{5}, \frac{6}{5})$

B)  $(-\infty, -\frac{4}{5}] \cup [\frac{6}{5}, \infty)$

D)  $(-\infty, -\frac{4}{5}) \cup (\frac{6}{5}, \infty)$

16) \_\_\_\_\_

Find the distance  $d(P_1, P_2)$  between the points  $P_1$  and  $P_2$ .

17)  $P_1 = (2, 2); P_2 = (2, -2)$

A) 4

B) 5

C) 2

D) 3

17) \_\_\_\_\_

Find an equation for the line with the given properties.

18) Perpendicular to the line  $x - 8y = 3$ ; containing the point  $(3, 3)$

A)  $y = 8x - 27$

B)  $y = -\frac{1}{8}x - \frac{27}{8}$

C)  $y = -8x - 27$

D)  $y = -8x + 27$

18) \_\_\_\_\_

Find the center-radius form of the equation of the circle.

19) Center  $(-3, 10)$ , radius  $\sqrt{3}$

A)  $(x - 3)^2 + (y + 10)^2 = 3$

B)  $(x - 10)^2 + (y + 3)^2 = 9$

C)  $(x + 3)^2 + (y - 10)^2 = 3$

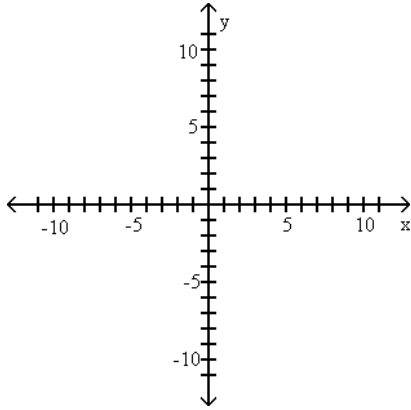
D)  $(x + 10)^2 + (y - 3)^2 = 9$

19) \_\_\_\_\_

Find x-intercept, y-intercept and slope for the graph of the equation. Then graph the equation.

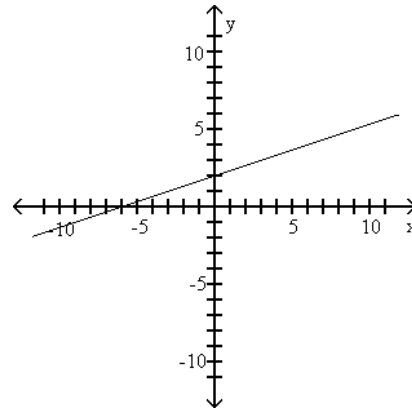
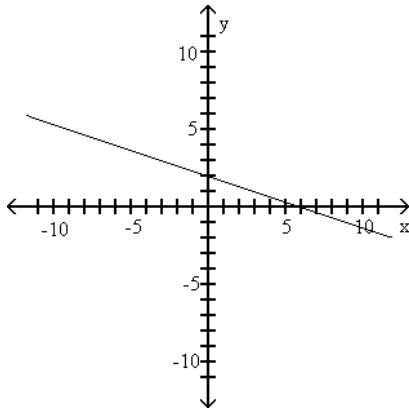
20)  $f(x) = \frac{1}{3}x + 2$

20) \_\_\_\_\_



A) x-intercept: 6; y-intercept: 2  
slope:  $-\frac{1}{3}$

B) x-intercept: -6; y-intercept: 2  
slope:  $\frac{1}{3}$



Find the distance between P and Q and the coordinates of the midpoint of the segment joining P and Q.

21) P(3, 6) and Q(1, 4)

21) \_\_\_\_\_

A) 4; (2, 2)

B)  $2\sqrt{2}$ ; (5, 2)

C) 4; (4, 10)

D)  $2\sqrt{2}$ ; (2, 5)