Exam 2

Name: _____

Circle your answer for problems 1-3. You must show correct work to receive credit.

(8 pts) 1. Find the midpoint of the points A (-3,4) and B (6,-5).

A. (3, -1)B. $-\frac{9}{2}, \frac{9}{2}$ C. (1, -1)D. $\frac{3}{2}, \frac{9}{2}$

E. None of the above

(8 pts) 2. Find all solutions of the equation (real and/or complex):

$$3x^2 - 4x + 5 = 0$$

A.
$$x = 4 \pm \frac{\sqrt{11}}{3}i$$

B. $x = -5$, $x = -\frac{1}{3}$
C. $x = \frac{2}{3} \pm \frac{\sqrt{11}}{3}i$
D. $x = -1$, $x = \frac{5}{3}$
E. $x = \frac{4}{3} \pm \frac{2\sqrt{11}}{3}i$

(8 pts) 3. Solve the inequality. Express your answer in interval notation.

3 | 2 - 7 | - 8 = 10

$$A. - ,\frac{1}{2} \quad \frac{13}{2},$$

$$B. \quad \frac{1}{2},\frac{13}{2}$$

$$C. - ,\frac{19}{6} \quad \frac{23}{6},$$

$$D. \quad \frac{13}{2},$$

$$E. \quad \frac{19}{6},\frac{23}{6}$$

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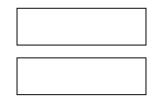
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Place your answer in the space provided. You must show correct work to receive credit.

(12 pts) 4. Find the general form (ax + by = c) for the equation of the line that passes through the point (-1,3) and perpendicular to the line x - 2y = 14.

(12 pts) 5. Find the center and radius of the circle given by:

$$x^{2} + y^{2} + 6x - 8y - 22 = 0$$



Center :

Radius:

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Place your answer in the space provided. You must show correct work to receive credit.

(12 pts) 6. Solve $2x^4 - 7x^3 - 15x^2 < 0$. Express your answer in interval notation.

(14 pts) 7. Solve for x. Check your answer(s).

$$\sqrt{5x-4} - x = -2$$

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Place your answer in the space provided. You must show correct work to receive credit.

- (14 pts) 8. The owner of an apartment complex has studied the occupancy of his building and has found that 55 units are occupied when the rent is \$390 per month. However, when the rent has been raised to \$430 per month, the number of occupied units dropped to 47. Assume that the number of occupied units is linearly related to the rent charged.
 - (10 pts) (a) Express the number of occupied units, N, in terms of the monthly rent, r.

N=

(4 pts) (b) What monthly rent should the owner charge to have 58 units occupied?

Monthly rent =

(12 pts) 9. A rectangular swimming pool is 5 meters wide and 10 meters long. A tile border of uniform width is to be built around the pool, using 100 square meters of tile. Find the width of the border. (Draw and label a picture, set up an equation, and solve.)

Width of border =

Name: _____

Answers:

1. E.

- 2. C.
- 3. A.
- 4. 2x + y = 1
- 5. Center = (-3, 4)
- Radius = $\sqrt{47}$ $-\frac{3}{2},0$ (0,5) (0,5) 6.
- 7. x = 8
- 8. a. N = -0.2r + 133b. \$375
- 2.5 meters 9.