Name: _____

Place your answers in the spaces provided. You must show correct work to receive credit.

(12 pts) 1. Given the points $A(-4,6)$ and $B(2,-1)$, answer each of the following:

(6 pts) (a) Find the distance between A and B.

(6 pts) (b) Find the midpoint of $\overline{AB}$.

(6 pts) 2. Write $(2-5i)^2$ in the form $a+bi$, where a and b are real numbers.

(10 pts) 3. Find the center and radius of the circle:

$$x^2 + y^2 - 8x + 12y - 3 = 0$$

Center:

radius=

Name: _____

Place your answers in the spaces provided. You must show correct work to receive credit.

(10 pts) 4. Solve for x. Simplify your answer(s) as much as possible.

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

$x =$ [ ]

(8 pts) 5. Solve the following inequality for x. Express your answer in interval notation.

$$\left|\frac{2x-3}{4}\right| < 5$$

[ ]

(8 pts) 6. Find an equation of the line that passes through the point $P(5,-2)$ and has slope $\frac{1}{3}$. Leave your answer in the form $ax + by = c$, where a, b, and c are integers.

[ ]

Name: _____

Place your answers in the spaces provided. You must show correct work to receive credit.

(10 pts) 7. Solve the following inequality for x. Express your answer in interval notation. Be sure to include a sign chart within your work.

$$2x^2 + 7x - 4 \geq 0$$

(16 pts) 8. Solve for x. Check your answer(s).

(8 pts) (a) $x - 4 = \sqrt{2x - 5}$

$x =$

(8 pts) (b) $x^4 - 7x^2 + 12 = 0$

$x =$

Name: _____

Place your answers in the spaces provided. You must show correct work to receive credit.

(10 pts) 9. A manufacturer of cans wishes to construct a closed right circular cylindrical can of height $10\ cm$ and the can is to have surface area $1200\pi\ cm^2$. Find the inner radius, r, of the can. Hint: surface area = $2\pi r^2 + 2\pi rh$. (Set up an equation and solve.)

$r =$ ☐

(10 pts) 10. The local fitness club is gaining members at a constant rate since it has had its grand opening. After 15 days, it had 180 members and after 28 days, it had 271 members. Assume that the relationship between the number of members and the number of days since the club's grand opening is linear. Express the number of members, N, in terms of the number of days, d, since the club's grand opening.

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Name: _____