Name:

Part I

Directions: Circle the correct answer for each question. (2 points each)

1. Rationalize the denominator and simplify.

$$\frac{3}{\sqrt{x+2}+\sqrt{3}}$$

(A) $\frac{3}{x+5}$ (C) $\frac{3(\sqrt{x+2}-\sqrt{3})}{x+5}$ (D) $\frac{3\sqrt{x-5}}{x+5}$

(B) $\frac{3\sqrt{x+5}}{x+5}$ (E) $\frac{3}{x-5}$

2. Express $-4 < x - 3 < 4$ in set notation using absolute value signs.

(A) $\{x : |x| < 4\}$ (D) $\{x : -1 < |x - 3| < 7\}$

(B) $\{x : -1 < |x| < 7\}$

(C) $\{x : |x - 3| < 4\}$ (E) $\{x : |x - 3| < 8\}$

3. Solve: $\dfrac{2x + 1}{4} = \frac{3x-1}{2x}$

(A) $\{-\frac{1}{2}, -4\}$ (C) $\{-\frac{3}{2}, 1\}$ (E) $\{\frac{7}{2}\}$

(B) $\{\frac{1}{2}, 2\}$ (D) $\{\frac{1}{2}, -4\}$

4. Find the center and radius of the circle $x^2 + 4x + y^2 - 4y + 6 = 0$.

(A) Center $(2, -2)$ Radius $\sqrt{6}$ (D) Center $(2, -2)$ Radius: $\sqrt{2}$

(B) Center $(-2, 2)$ Radius $\sqrt{2}$

(C) Center: $(2, -4)$ Radius: 2 (E) Center $(-4, 2)$ Radius 6

5. What is the domain of the function $f(x) = \frac{4x}{x^2 - 4}$

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

(B) $(-\infty, 0) \cup (0, \infty)$

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

(D) $(-2, 2)$

(E) $(0, \infty)$

Part II

Directions: Answer each question completely and show your work completely for full credit. Circle your final answer. (4 points each)

1. Find the slope and x-intercept of the line given by the equation $6x + 7y = -5$

2. Factor and solve. $6x^2 - 11x - 10 = 0$

3. Simplify the following. (Your final answer should have only positive exponents.)

$$\left(\frac{(x^3 y^{-4})^2}{x^{-1} y^{-6}} \right)^{-1}$$

4. Use key number method to solve the following inequality.

$$\frac{(x+2)(x-4)}{x(x-6)} \geq 0$$

5. Let $f(x) = x^2 - 1$, $g(x) = \frac{1}{x-3}$, $h(x) = 2x$. Find $(f \circ g \circ h)(x)$.