1. (28 pts, 4 pts each)

(a) Multiply and simplify completely: \((3x - 5)(4x + 7)\)

(b) Multiply and simplify completely: \((2x - y)^2\)

(c) Simplify completely: \(\sqrt{12x^4y^3}\)

(d) Factor completely: \(x^4 - 16\)

(e) Simplify: \(\frac{a^{2/3}b^2}{a^2b^{-1}}\)
(f) Add and simplify \( \frac{1}{x} + \frac{2}{x - 1} \)

(g) Simplify the expression: \( \frac{x}{x+2} + \frac{2}{\frac{2}{x+2}} - \frac{x}{x+2} \)

2. Solve the following equations: (24 pts, 6 pts each)

   (a) \( \frac{3x + 1}{5x + 7} = \frac{6x + 11}{10x - 3} \)

   (b) \( 9x^3 - 18x^2 - 4x + 8 = 0 \)
(c) \( x(3x + 4) = 2 \)

(d) Solve for \( C \): \[ P + N = \frac{P + 2}{C} \]

3. Find the distance between \( A(2, 3) \) and \( B(-3, -2) \). (6 pts)

4. Find the \( x \) and \( y \) intercepts for \( 9y + 4x^2 = 3 \). (7 pts)
5. Find the domain of the following functions. (14 pts, 7 pts each)

(a) \[ f(x) = \sqrt{16 - x^2} \]

(b) \[ g(x) = \frac{2x - 5}{x^2 - 5x + 4} \]

6. (a) Find the center and radius of the following circle: \[ x^2 + 4x + y^2 - 12y + 36 = 0 \] (14 pts, 7 pts each)

(b) Sketch the graph of the following circle: \[(x - 1)^2 + (y + 2)^2 = 1\]. Make sure to label the center point on the graph and label tick marks.
7. An envelope has the property that its length \( l \) is three times its width \( w \). Express the area as a function of width and state the domain of the area. (7 pts)