

Name: _____ Date: _____

Problem 1 (8 points). Consider the function

$$g(x) = \frac{x^2 - 8x + 15}{3x^2 + 9x + 6}.$$

- (a) (2 point) Factor the expression completely.
- (b) (1 point) Find the x -intercepts of g .
- (c) (1 point) Find the y -intercepts of g .
- (d) (1 point) Find the vertical asymptotes of g , if they exist.
- (e) (1 point) Find the horizontal asymptotes of g , if they exist.
- (f) (2 point) Sketch the graph of g .

Problem 2 (1 point). Graph $f_0(x) = \sqrt{x}$.

Problem 3 (1 point). Graph $f_1(x) = -\sqrt{x}$.

Problem 4 (1 point). Graph $f_2(x) = -\sqrt{2x}$.

Problem 5 (1 point). Graph $f_3(x) = -\sqrt{2x+3}$.

Problem 6 (1 point). Graph $f_4(x) = -\sqrt{2x+3} + 5$.

Problem 7 (1 point). Find the domain and range of $f_4(x) = -\sqrt{2x+3} + 5$.