

## EXAM 4 - MATH 102

DATE: Friday, December 8

INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. Each question is worth 5 points. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. (a) Divide  $8x^3 - 6x^2 + 5x - 9$  by  $2x - 3$  using long division. (3 points)  
(b) Use synthetic division to find the quotient and the remainder of  $(3x^4 - 41x^2 - 13x - 8) \div (x - 4)$ . (2 points)
2. (a) Solve the rational equation  $\frac{2}{x^2-4} + \frac{5}{x+2} = \frac{7}{x-2}$ . (3 points)  
(b) Solve the rational equation  $6x^{-1} + 9x^{-1} = 25(x+2)^{-1}$ . (2 points)
3. A printing press can print the evening paper in half the time another press takes to print it. Together the presses can print the paper in 2 hours. How long will it take each of them to print the paper?
4. (a) Simplify and rationalize the denominator in  $\sqrt[4]{\frac{64a^2}{9b^6}}$ . (1 point)  
(b) Compute the product and simplify:  $(2\sqrt{2} + 5\sqrt{3})(3\sqrt{2} + \sqrt{3})$ . (2 points)  
(c) Rationalize the denominator  $\frac{5a+b}{2+\sqrt{3}}$ . (2 points)
5. (a) Solve the equation  $\sqrt{x-3} + \sqrt{2x+1} = 2\sqrt{x}$ . (3 points)  
(b) Perform the division  $\frac{3+\sqrt{-5}}{4+\sqrt{-2}}$  and write your answer in the standard form. (2 points)