

EXAM 3 - MATH 102

DATE: Friday, November 10

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. Use the special products to perform the indicated multiplications:

(a) $(2x + y)(2x - y)y^2$ (1 point)

(b) $[(2x - 1) - 4y]^2$ (2 points)

(c) $[2y + (3x - 1)]^2$ (2 points)

2. Factor the following polynomials:

(a) $x^6 - 2x^5 + 2x^4 - 4x^3$ (1 point)

(b) $4x^2 - 12xy + 9y^2$ (2 points)

(c) $25x^2 - (4y^2 - 4yz + z^2)$ (2 points)

3. The cost of serving x customers is given by $(x^2 + 10x + 100)$ dollars. If \$1300 is spent serving customers, how many customers are served? (5 points)

4. Perform the operations and simplify:

(a) $\frac{x^2+2x-15}{x^2-7x+10} \cdot \frac{x^2-6x+8}{x^2-x-12}$ (1 point)

(b) $\frac{x^2+xy-2y^2}{x^2-4y^2} \div \frac{x^2-y^2}{x^2-2xy} \cdot \frac{(x+y)^2}{x^2}$ (2 points)

(c) $\frac{x+3}{x^2-x-2} - \frac{x-1}{x^2+2x+1}$ (2 points)

5. Simplify the following complex fractions:

(a) $\frac{3-\frac{2}{y}}{\frac{1}{y}+4}$ (1 point)

(b) $\frac{\frac{3}{x-4}-\frac{16}{x-3}}{\frac{2}{x-3}-\frac{15}{x+5}}$ (2 points)

(c) $\frac{x(x+y)^{-1}+1}{1-y(x+y)^{-1}}$ (2 points)