

EXAM 1 - MATH 140

DATE: Friday, September 15

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!!

- Solve $2x^2 + 5x - 3 = 0$ by factoring. (2 points)
 - Solve $(4x - 5)^2 = 9$ by the Square Root Method. (1 point)
 - Solve $4 - 7x < -17$ and express the solution in interval notation. (2 points)
- Find the length of the straight line segment with endpoints $(-1, 1)$ and $(5, -2)$. (3 points)
 - Find the midpoint of the straight line segment with endpoints $(1, 2)$ and $(7, 15)$. (2 points)
- Find two points on the graph of the equation $7x + 3y = 21$. (1 point)
 - Sketch the graph of the equation $7x + 3y = 21$ using the points that you found in the previous part. (2 points)
 - Find the x - and the y -intercepts of the graph of $7x + 3y = 21$. (2 points)
- Test the equation $y = \frac{x}{x^2-3}$ for symmetry with respect to the origin. (2 points)
 - Graph the equation $(x + 2)^2 + (y - 4)^2 = 9$. (1 point)
 - Find the center and the radius of the circle with equation $x^2 + y^2 - 12x + 10y + 52 = 0$. (2 points)
- If $f(x) = \frac{-x^2+6x-5}{x^2-2x-3}$, find the domain $\text{Dom}(f)$. (2 points)
 - Find the x - and the y -intercepts of the function f of the previous part. (2 points)
 - Consider the function g whose graph is given in the following diagram. Give in a tabular form the intervals in which it is increasing and the intervals in which it is decreasing. On your table also indicate the relative maxima and the relative minima, if there are any. (1 point)