HOMEWORK 3 - MATH 111
DUE DATE: Friday, September 27
INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. Each question is worth 1 point. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. The equation of the line perpendicular to $y = 5x - 2$ and passing through $(5, 2)$ is

   (a) $\quad y = -\dfrac{1}{5}x + 1$ $\quad (b)$ $\quad y = 5x + 2$ $\quad (c)$ $\quad y = -\dfrac{1}{5}x + 3$ $\quad (d)$ $\quad y = \dfrac{1}{5}x + 1$

2. The equation of the line with x-intercept 3 and y-intercept -9 is

   (a) $\quad y = 2x - 9$ $\quad (b)$ $\quad y = -9x + 3$ $\quad (c)$ $\quad y = -\dfrac{1}{3}x - 1$ $\quad (d)$ $\quad y = 3x - 9$

3. The Revenue R in terms of the number of items produced is given by $R(x) = 3x$ and the cost C by $C(x) = 2x + 7$. Then, the break-even point and the break-even price are

   (a) $\quad 7, 21$ $\quad (b)$ $\quad 3, 9$ $\quad (c)$ $\quad 3, 13$ $\quad (d)$ $\quad \dfrac{1}{3}, 1$

4. The supply S and the demand D in terms of the number of items q are given by $S(q) = \frac{1}{2}q + 4$ and $D(q) = -\frac{2}{3}q + 18$, respectively. Then the equilibrium demand and the equilibrium price are

   (a) $\quad 10, 9$ $\quad (b)$ $\quad 12, 10$ $\quad (c)$ $\quad 3, 16$ $\quad (d)$ $\quad 1, \dfrac{17}{4}$

5. The solutions of $17x^2 - 17x = 0$ are

   (a) $\quad 0, -1$ $\quad (b)$ $\quad 0, 1$ $\quad (c)$ $\quad -1, 1$ $\quad (d)$ $\quad 1, 17$

6. $4x^2 - 8x - 5 = 0$ has

   (a) $\quad 0$ $\quad (b)$ $\quad 1$ $\quad (c)$ $\quad 2$ $\quad (d)$ $\quad 3$ solutions

7. George wants to buy a rug for a hallway that is 2 feet by 4 feet. He wants to leave a uniform strip of floor around the rug. Since he is a logician, he can only afford 3 square feet of carpeting. Can you help him out by computing what dimensions the rug should have?

(a) 1.5×3.5 (b) 1.75×3.75 (c) 0.5×2.5 (d) 1×3

8. $|3x - 2| + 4 > 6$ has solutions

(a) $x \leq 0 \, or \, x > \dfrac{4}{3}$ (b) $0 < x < \dfrac{4}{3}$ (c) $x < 0 \, or \, x > \dfrac{4}{3}$ (d) $0 \leq x < \dfrac{4}{3}$