# HOMEWORK 3 - MATH 111

DUE DATE: Wednesday, September 25
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

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

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

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

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

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

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

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

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

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

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?

$(a)\quad 1.5 \times 3.5 \quad (b)\quad 1.75 \times 3.75 \quad (c)\quad 0.5 \times 2.5 \quad (d)\quad 1 \times 3$

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

$(a)\quad x \leq 0 \text{ or } x > \frac{4}{3} \quad (b)\quad 0 < x < \frac{4}{3} \quad (c)\quad x < 0 \text{ or } x > \frac{4}{3} \quad (d)\quad 0 \leq x < \frac{4}{3}$