

PART B (PRE-CALCULUS / MTT101)
SAMPLE QUESTIONS

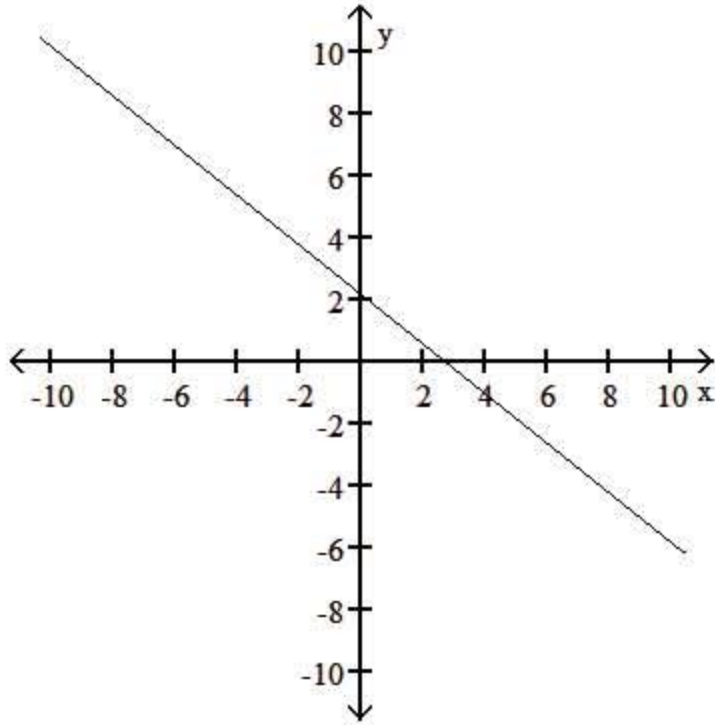
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Graph the linear equation and determine its slope, if it exists.

1) $4x + 5y = 11$

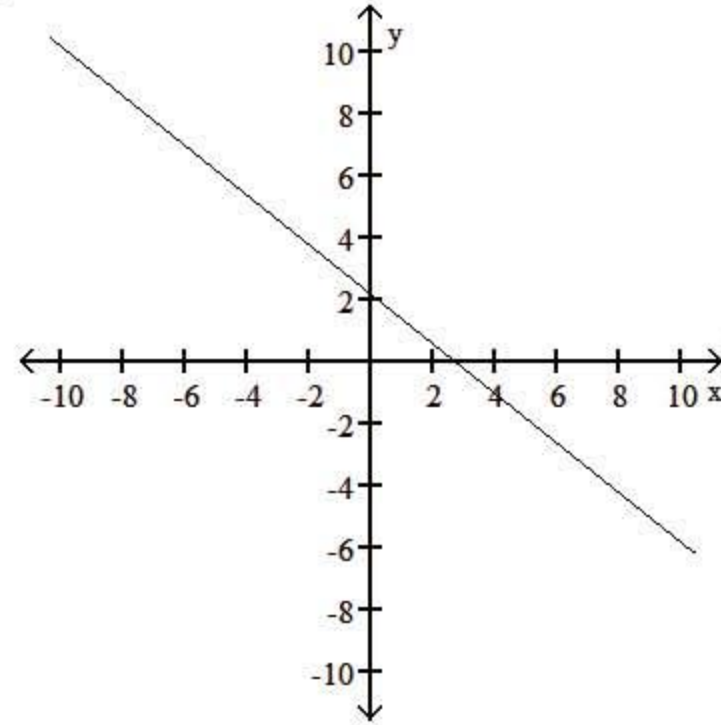
1) _____

A)



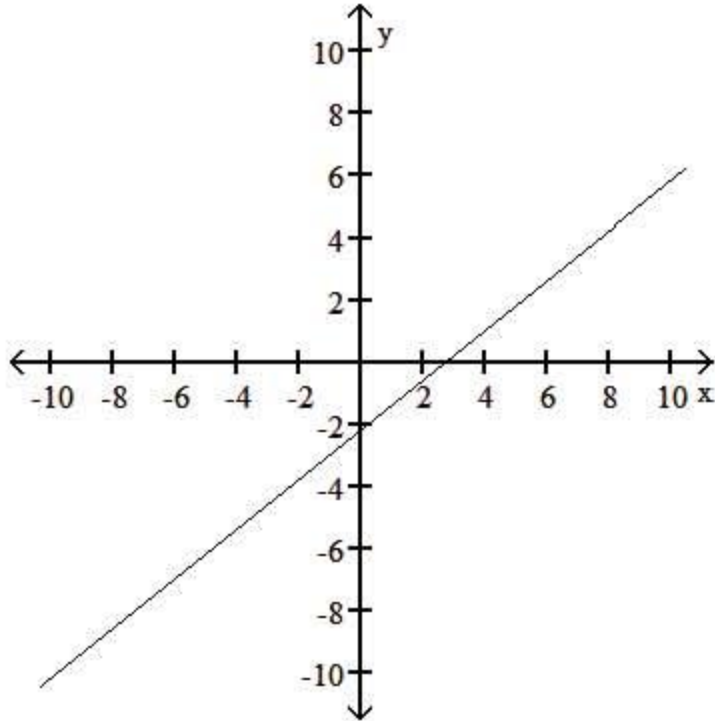
$m = \frac{4}{5}$

B)



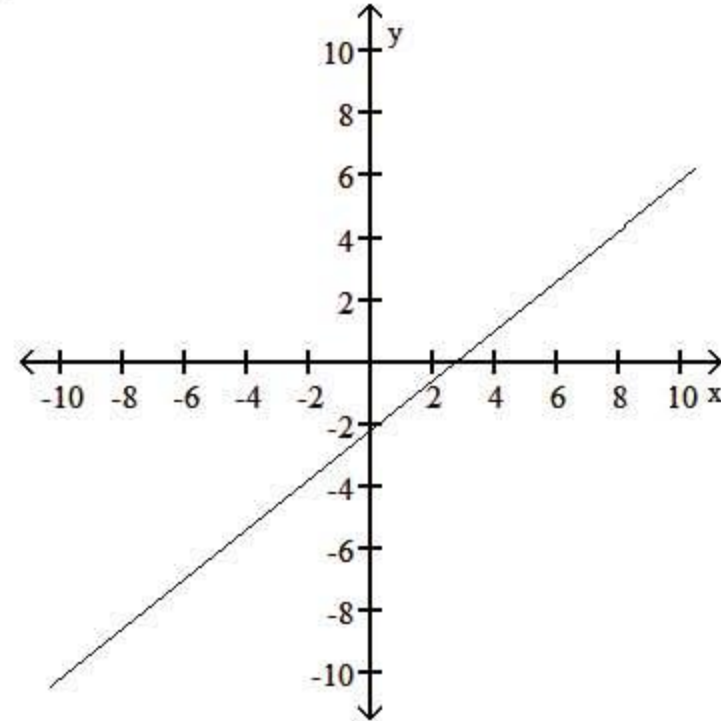
$m = -\frac{4}{5}$

C)



$m = -\frac{4}{5}$

D)



$m = \frac{4}{5}$

Answer the question.

2) How can the graph of $f(x) = \frac{1}{-x} - 9$ be obtained from the graph of $y = \frac{1}{x}$?

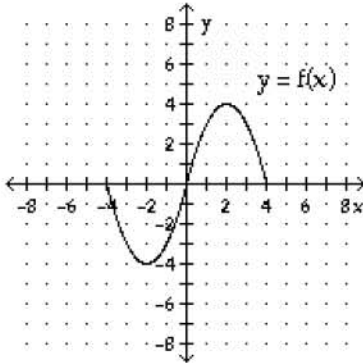
2) _____

- A) Reflect it across the y-axis. Shift it 9 units up.
- B) Reflect it across the x-axis. Shift it 9 units down.
- C) Reflect it across the x-axis. Shift it 9 units up.
- D) Reflect it across the y-axis. Shift it 9 units down.

The graph of the function f is shown below. Match the function g with the correct graph.

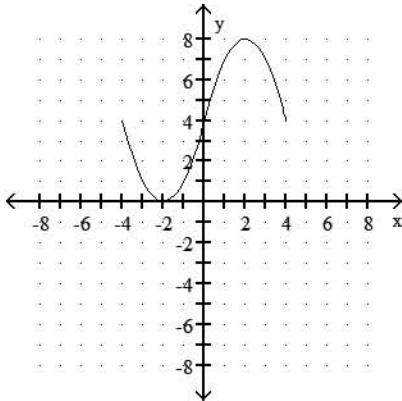
3)

3) _____

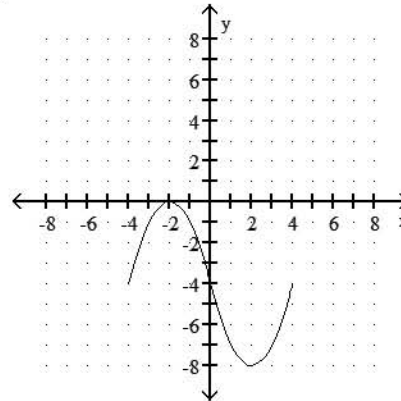


$$g(x) = -f(-x) - 4$$

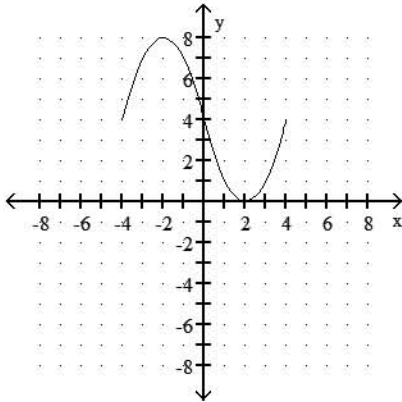
A)



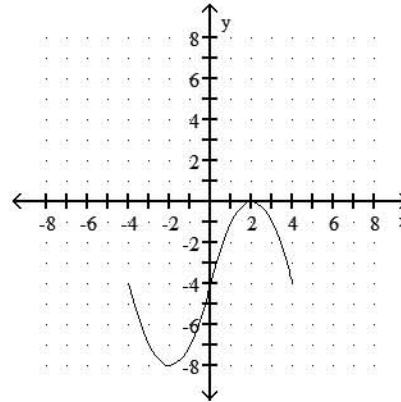
B)



C)

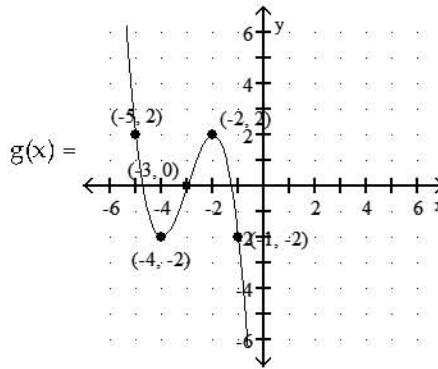
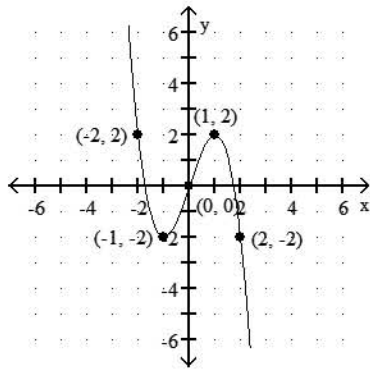


D)



Given the graph of the function $f(x) = -x^3 + 3x$; find a formula for $g(x)$.

4) $f(x) = -x^3 + 3x$



4) _____

- A) $g(x) = f(x + 3)$ B) $g(x) = f(x - 3)$ C) $g(x) = f(x) - 3$ D) $g(x) = f(x) + 3$

Solve.

5) $45x + 9x^2 = 0$

- A) -22.5 B) -9, -5 C) -5 D) 0, -5

5) _____

6) $\frac{7x}{x-7} - \frac{4}{x} = \frac{28}{x^2 - 7x}$

- A) $\frac{4}{7}$ B) $\frac{4}{7}, -\frac{4}{7}$ C) $\frac{2}{7}, -\frac{2}{7}$ D) $\frac{7}{4}$

6) _____

7) $|2x| = -3$

- A) -0.67, 0.67 B) \emptyset C) 1.5 D) -1.5

7) _____

A polynomial $P(x)$ and a divisor $d(x)$ are given. Use long division to find the quotient $Q(x)$ and the remainder $R(x)$ when $P(x)$ is divided by $d(x)$, and express $P(x)$ in the form $d(x) \cdot Q(x) + R(x)$.

8) $P(x) = x^4 + 3x^2 + 14$

$d(x) = x^2 - 3$

- A) $(x^2 - 3) \cdot (x^2 - x + 6) + 14$ B) $(x^2 - 3) \cdot (x^2 + 6) + 32$
 C) $(x^2 - 3) \cdot (x^2 - 3x + 6) + 32$ D) $(x^2 - 3) \cdot (x^2 + 6) + 18$

8) _____

Factor the polynomial $f(x)$. Then solve the equation $f(x) = 0$.

9) $f(x) = x^3 - 11x^2 + 36x - 36$

- A) $(x + 2)(x - 3)(x + 6)$; -2, 3, -6 B) $(x - 2)(x - 3)(x - 6)$; 2, 3, 6
 C) $(x - 2)(x - 3)(x - 7)$; 2, 3, 7 D) $(x - 2)(x + 3)(x - 6)$; -2, 3, -6

9) _____

Find the horizontal asymptote, if any, of the rational function.

10) $f(x) = \frac{7x^4 + 6x - 7}{x^2 - 7}$

- A) $y = 0$ B) $y = 1$ C) $y = 7$ D) None

10) _____

Provide an appropriate response.

19) Fill in the blanks to complete the statement. For a system of 4 equations and 4 unknowns, the corresponding augmented matrix will have ? rows and ? columns.

A) 4;5

B) 5;5

C) 4;4

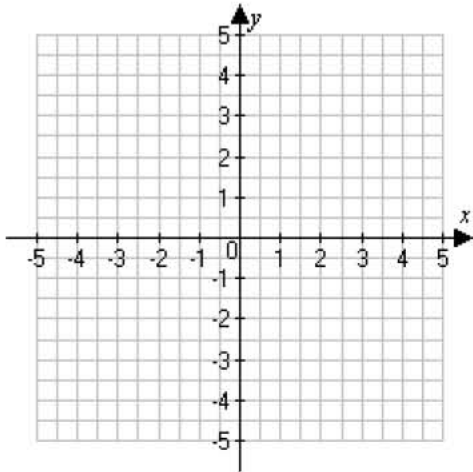
D) 5;4

19) _____

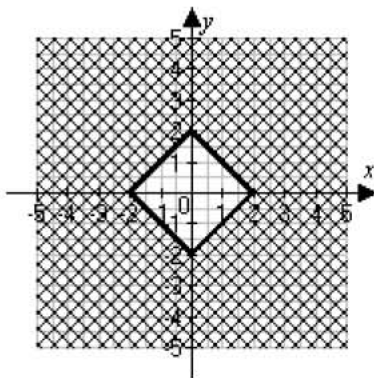
Graph the inequality.

20) $|x + y| \geq 2$

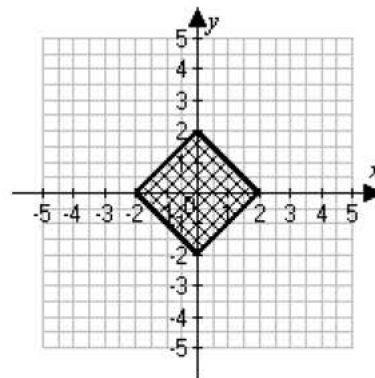
20) _____



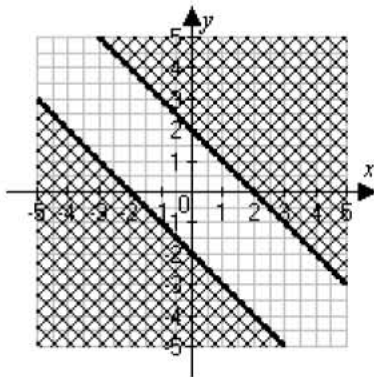
A)



B)



C)



D)

