SAMPLE Math 19 Gateway Exam SAMPLE

Name: ____________________________  Date: ____________________________

Circle the letter of the correct answer. Calculators are not allowed. Make sure you do the problems on the back of this sheet (if any). **Time allowed: 20 minutes.**

1. Evaluate and simplify the expression \( \frac{m^3}{3m^2 - v} \) if \( m = -2v \).
   (a) \( \frac{2}{6v+1} \)  (b) \( \frac{1}{6v} + 2 \)  (c) \( \frac{1}{8} \)  (d) \( \frac{-2}{12v-1} \)  (e) \( \frac{-1}{6v} + 2 \)

2. What are the coordinates of the point \( Q \)?
   \[ y = x^2 - 3 \]
   \[ y = x + 3 \]
   (a) \((-2,1)\)  (b) \((3,3)\)  (c) \((3,6)\)  (d) \((-3,0)\)  (e) \((2,5)\)

3. The \( y \)-intercept of the line having equation \(-5 + 6y + 6x = 0\) is
   (a) \( \frac{5}{6} \)  (b) \( \frac{5}{6} \)  (c) \(-\frac{5}{6} \)  (d) \(-\frac{6}{5} \)  (e) \(-1\)

4. Which of the following is equivalent to \( \left(\frac{x-3y}{2x}\right)^{-1} \)?
   (a) \( \frac{1}{2xy^2} \)  (b) \( \frac{2x}{2xy} \)  (c) \( \frac{2x^2}{y} \)  (d) None of these expressions are equivalent  (e) \( \frac{2x}{2xy} \)

5. Which of the following is equivalent to \(-5x(\frac{1}{2} - 2y)\)?
   (a) \(10y-15\)  (b) \(10xy-15\)  (c) \(-15-2y\)  (d) \(10xy-15x\)  (e) None of these expressions are equivalent.

6. If \(w^2 + 2w + 1 = 6w - 3\), what are all possible values of \(w\)?
   (a) \(-1, \frac{1}{2}\)  (b) \(1, \frac{1}{2}\)  (c) \(-1\)  (d) \(2\)  (e) \(1\)

7. Which of the following is equivalent to \(y U^{2/5}\)^{1/9}?
   (a) \(y^{10/9} U^{23/45}\)  (b) \(y^{1/9} U^{2/45}\)  (c) \(y^9 U^{18/5}\)  (d) None of these expressions are equivalent  (e) \(y U^{2/45}\)

8. Suppose that \(-3x + 9y = -6\) and \(x + 7y = -2\). What is \(y\)?
   (a) \(-\frac{2}{3}\)  (b) \(\frac{4}{3}\)  (c) \(-\frac{2}{3}\)  (d) \(\frac{2}{3}\)  (e) \(-\frac{4}{3}\)
9. If \( y = \phi x^4 - x^3 \) and \( (3, 0) \) is a solution then what is \( \phi \)?
(a) 3  (b) \( \frac{3}{4} \)  (c) -44  (d) \( \frac{1}{3} \)  (e) 27

10. Which of the following inequalities describes all of the \( x \)-values which are greater than \(-9\)?
(a) \( \infty > x > -9 \)  (b) \( -8 \leq x < \infty \)  (c) \(-9 < x < 0 \)  (d) \(-8 \leq x > \infty \)  (e) \(-9 < x > 0 \)

11. Which of the following is equivalent to \( \frac{3}{4} + \frac{1}{8} \)?
(a) \( \frac{3}{8} \)  (b) \( \frac{2}{10} \)  (c) \( \frac{33}{32} \)  (d) \( \frac{1}{10} \)  (e) \( \frac{21}{20} \)

12. If \( (g + 4)(g + 5) = 30 \), what are all possible values of \( g \)?
(a) 25 and 26  (b) 1  (c) -4 and -5  (d) -1 and 0  (e) -10 and 1