Montclair State University (MSU), Department of Mathematical Sciences

MSU Mathematics Placement Test

Sample Problems for Intermediate Algebra

Answers to the following sample problems are given below.

1. \(8^{2/3} =\)
   (a) \(\frac{16}{3}\)  (b) \(\frac{64}{3}\)  (c) 2  (d) 4  (e) none of these

2. \((x - 2)^2 =\)
   (a) \(x^2 - 4\)  (b) \(x^2 + 4\)  (c) \(x^2 - 4x + 4\)  (d) \(x^2 + 4x + 4\)
   (e) none of these

3. What is the equation of a straight line passing through (3, 2) with a slope of 4?
   (a) \(y = 3x + 4\)  (b) \(y = 4x - 10\)  (c) \(3x + 2y = 4\)  (d) \(4x + 3y = 2\)
   (e) none of these

4. If \(a > 0\) and \(b > 0\), then \(3(a^0b^2) =\)
   (a) \(3b^2\)  (b) 3  (c) 1  (d) \(3ab^2\)  (e) none of these

5. The graph of \(x^2 - y^2 = 10\) is
   (a) a circle  (b) an ellipse  (c) a hyperbola  (d) a parabola
   (e) none of these

6. The time in hours to travel 30 miles at \(x - 1\) miles per hour is
   (a) \(\frac{30}{x - 1}\)  (b) \(\frac{x - 1}{30}\)  (c) \(30(x - 1)\)  (d) \(30x - 1\)
   (e) none of these

7. Translate into mathematical equation: “3 is divided by 4 less than a number \(x\) and
   the result is 12”
   (a) \(\frac{4 - x}{3}\)  (b) \(\frac{3}{4 - x}\)  (c) \(\frac{x}{3} - 4 = 12\)  (d) \(\frac{3}{x - 4} = 12\)
   (e) none of these

8. \(\sqrt{5} + \sqrt{20} =\)
   (a) \(2\sqrt{5}\)  (b) 5  (c) \(3\sqrt{5}\)  (d) 10  (e) none of these
9. Evaluate \( ac^2 + a^3b \) if \( a = 2, b = 3, \) and \( c = 4 \)
   
   (a) 27       (b) 32       (c) 49       (d) 56       (e) none of these

10. If the graph of \( y = x^2 + 2x + k \) passes through the point \((1, 2)\), then \( k = \)

   (a) 1       (b) -1       (c) 2       (d) -2       (e) none of these

Answers: 1-d, 2-c, 3-b, 4-a, 5-c, 6-a, 7-d, 8-c, 9-d, 10-b