Montclair State University (MSU), Department of Mathematical Sciences

Sample Problems for Calculus (MATH 116 & MATH 122) Readiness Test

Answers to the following sample problems are given below. (You will have 45 minutes to do 25 problems on the actual test.)

1. $3(2^2 - 6) =$

   (a) -6 (b) 6 (c) 24 (d) 48 (e) none of these

2. $8^{-2/3} =$

   (a) $16\sqrt{2}$ (b) $\frac{1}{4}$ (c) $5\frac{1}{3}$ (d) 4 (e) none of these

3. If angle A lies in the first quadrant of the rectangular coordinate system and $\tan A = \frac{3}{4}$, then $\sec A =$

   (a) $\frac{4}{5}$ (b) $\frac{3}{5}$ (c) $\frac{5}{4}$ (d) 4 (e) none of these

4. If $\sin x - \cos x = 0$ and $0° \leq x \leq 180°$, then $x =$

   (a) $45°$ (b) $90°$ (c) $135°$ (d) -1 (e) none of these

5. $\log_2 8 =$

   (a) 16 (b) 9 (c) 4 (d) 3 (e) none of these

6. The graph of $y = \sqrt{9 - x^2}$ is

   (a) a semicircle (b) an ellipse (c) a parabola (d) a point
   (e) none of these

7. The minimum value attained by $y = 3\sin(4x + 5)$ is

   (a) 3 (b) 4 (c) 5 (d) -3 (e) none of these

8. The slope of the straight line given by $2x + 3y = 4$ is

   (a) 2 (b) 3 (c) $\frac{3}{2}$ (d) $-\frac{2}{3}$ (e) none of these

9. For a circle, circumference $C = 2\pi r$ and diameter $d = 2r$, where r is the circle's radius. Express C in terms of d. $C =$

   (a) $4\pi d$ (b) $2\pi d$ (c) πd (d) $\frac{\pi}{d}$ (e) none of these

10. $\cos\left(\frac{3\pi}{4}\right) =$

(a) $-\frac{\sqrt{2}}{2}$ (b) $\frac{1}{2}$ (c) $-\frac{1}{2}$ (d) $\frac{\sqrt{3}}{2}$ (e) none of these

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