

Practice Exam for Exam 3, Math 1113, Fall 2007

Print Your Name:

- (1) Graphic calculator is allowed.
- (2) In some problems you will need to circle more than one alternatives.
- (3) Some problems are not multiple choice.

1. Find all the x -value(s) of the solution of the following system.

$$\begin{cases} 3x + 2y = -3 \\ 2x + 3y = -7. \end{cases}$$

- A) $x = 1$ B) $x = -1$ C) $x = 3$ D) $x = -3$ E) None of these

2. Find all the y -value(s) of the solution of the system in Problem 1.

- A) $y = 1$ B) $y = -1$ C) $y = 3$ D) $y = -3$ E) None of these

3. Find all the x -value(s) of the solution of the following system.

$$\begin{cases} x - y + 3z = -8 \\ 3x + y - 2z = 2 \\ 2x + 4y + z = 0. \end{cases}$$

- A) $x = -1$ B) $x = -1$ C) $x = 2$ D) $x = -2$ E) None of these

4. Find all the y -value(s) of the solution of the system in Problem 3.

- A) $y = 1$ B) $y = -1$ C) $y = 2$ D) $y = -2$ E) None of these

5. Find all the z -value(s) of the solution of the system in Problem 3.

- A) $z = 1$ B) $z = -1$ C) $z = 2$ D) $z = -2$ E) None of these

6. Find all the x -value(s) of the solution of the following system.

$$\begin{cases} y - x = -1 \\ x = y^2 + 1. \end{cases}$$

- A) $x = 0$ B) $x = 1$ C) $x = -1$ D) $x = 2$ E) $x = -2$ F) None of these

7. Find all the y -value(s) of the solution of the system in Problem 6.

- A) $y = 0$ B) $y = 1$ C) $y = -1$ D) $y = 2$ E) $y = -2$ F) None of these

8. Solve the following system of equations **by substitution**.

$$\begin{cases} 2x - y = -9 \\ x + 3y = 3. \end{cases}$$

Justify your answer.

9. Solve the following system of equations by the method of your choice.

$$\begin{cases} 2x^2 + y^2 = 9 \\ -x^2 + 2y^2 = -2. \end{cases}$$

Justify your answer.

10. Convert the angle 20° in degree to radian.

11. Convert the angle 1 in radian to degree.

12. Simplify $4 \sin\left(\frac{\pi}{4}\right) \cos\left(\frac{\pi}{3}\right) - \tan\left(\frac{\pi}{4}\right)$.

13. Let θ be the angle in Problem 3 on page 484. Find $\sin \theta$.

14. Find a in problem 32 on page 485.

15. A road is inclined at an angle of 5° . After driving 5000 feet along this road, find the driver's increase in altitude.

16. Find the reference angle for 225° .

17. Find $\tan(225^\circ)$.

18. Find the reference angle for $\frac{11\pi}{3}$.

19. Find $\sec\left(\frac{11\pi}{3}\right)$.

20. Simplify $4 \sin\left(\frac{\pi}{3}\right) \cos(\pi) - \tan\left(\frac{\pi}{3}\right) \cot\left(\frac{\pi}{6}\right)$.

21. Find the amplitude, period, and phase shift of the function $y = -3 \sin(2\pi x + 3\pi)$.

22. Find the amplitude, period, and phase shift of the function $y = -\cos(2x - 3\pi)$.

23. Let f be the function defined by the graph in problem 61 on page 518. Find $f(x)$.

24. Example 8 on page 516. The graph in Figure 4.76 shows one complete normal breathing cycle. The cycle consists of inhaling and exhaling. It takes place every 5 seconds. Velocity of air flow is positive when we inhale and negative when we exhale. It is measured in liters per second. If y represents velocity of air flow after x seconds, find a function of the form $y = A \sin Bx$ that models air flow in a normal breathing cycle.