



INSTRUCTOR USE ONLY	
GRADE	GRADED BY

Date: _____

YOUR STUDENT NO.					

Name: _____

EXAMINATION NO.
05058700

**Precalculus
Proctored Final Examination**

1. Write the equation below in its equivalent exponential form.

$$\log_5 25 = x$$

- a. $x^5 = 25$
- b. $25^x = 5$
- c. $5^x = 25$
- d. $25^5 = x$

2. Write the first four terms of the sequence whose general term is given below.

$$a_n = 4(3n - 1)$$

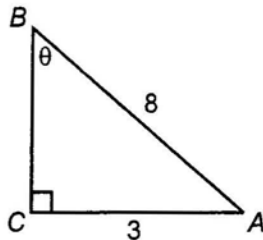
- a. 8, 20, 32, 44
- b. 2, 5, 8, 11
- c. 8, 16, 24, 32
- d. -4, 8, 20, 32

3. Use the addition method to solve the system below:

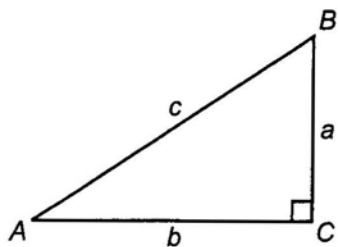
$$\begin{aligned} 4x + 27y &= 27 \\ 8x - 3y &= -3 \end{aligned}$$

- a. $\{(1, 0)\}$
- b. $\{(1, 1)\}$
- c. $\{(0, 1)\}$
- d. $\{(0, 0)\}$

4. In the right triangle ABC below, C is the right angle, and two sides are given. Find $\sin \theta$ of the given angle.



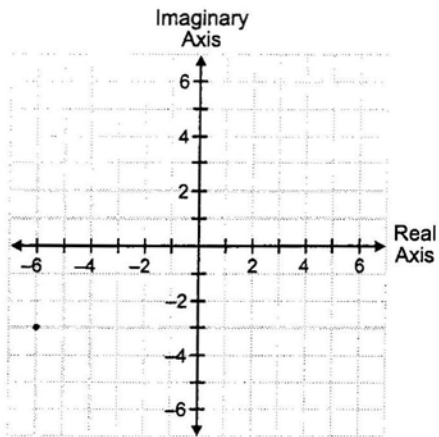
- a. $\frac{8\sqrt{55}}{55}$ c. $\frac{3\sqrt{55}}{55}$
 b. $\frac{3}{8}$ d. $\frac{\sqrt{55}}{8}$
5. Find the reference angle for $\frac{5\pi}{4}$.
- a. $\frac{\pi}{4}$ c. $\frac{3\pi}{4}$
 b. $\frac{5\pi}{4}$ d. $\frac{\pi}{8}$
6. Find the area of a triangle with these measurements: $C = 100^\circ$, $a = 1$ yard, and $b = 8$ yards. Round your answer to the nearest square unit.
- a. 1 square yard c. 16 square yards
 b. 4 square yards d. 98 square yards
7. Solve the right triangle in the figure below in which $A = 51.9^\circ$ and $c = 51.2$. Round lengths to one decimal place and express angles to the nearest tenth of a degree.



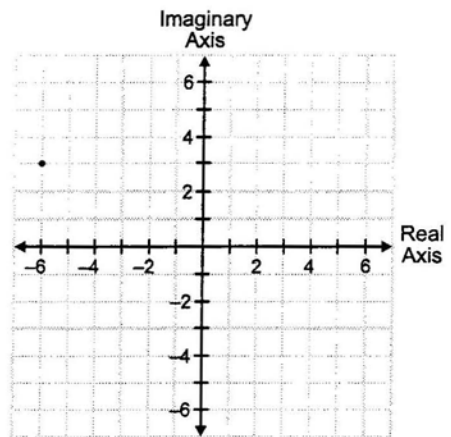
- a. $B = 38.1^\circ$, $a = 31.6$, $b = 40.3$
 b. $B = 38.1^\circ$, $a = 40.3$, $b = 31.6$
 c. $B = 51.9^\circ$, $a = 40.3$, $b = 31.6$
 d. $B = 51.9^\circ$, $a = 31.6$, $b = 40.3$

8. Plot the complex number $-3 + 6i$.

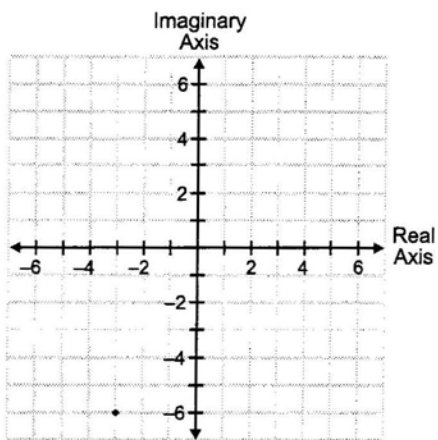
a.



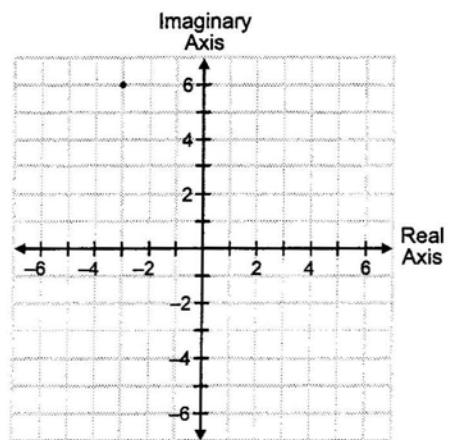
c.



b.



d.



9. Write the expression below as the cosine of an angle, knowing that the expression is the right side of the formula for $\cos(\alpha - \beta)$ with particular values for α and β .

$$\cos(155^\circ)\cos(35^\circ) + \sin(155^\circ)\sin(35^\circ)$$

a. $\cos(220^\circ)$

c. $\cos(210^\circ)$

b. $\cos(190^\circ)$

d. $\cos(120^\circ)$

10. Solve the equation below on the interval $[0, 2\pi)$.

$$\cos 2x = \frac{\sqrt{3}}{2}$$

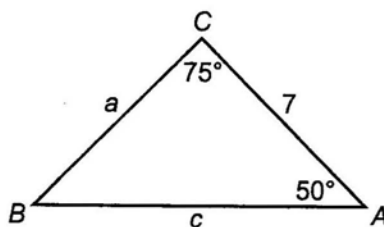
a. $\frac{\pi}{6}, \frac{11\pi}{6}$

c. $\frac{\pi}{6}, \frac{11\pi}{6}, \frac{13\pi}{12}, \frac{23\pi}{12}$

b. $\frac{\pi}{2}$

d. $\frac{3\pi}{2}$

11. Solve the triangle below.



a. $B = 60^\circ, a = 6.55, c = 8.25$

b. $B = 55^\circ, a = 6.55, c = 8.25$

c. $B = 50^\circ, a = 8.25, c = 6.55$

d. $B = 55^\circ, a = 8.25, c = 6.55$

12. Find the exact value of the expression $\sin^{-1}(-0.5)$.

a. $-\frac{\pi}{6}$

c. $\frac{\pi}{3}$

b. $\frac{\pi}{6}$

d. $\frac{7\pi}{3}$

18. If the sequence below is a geometric sequence, find the common ratio.

$$\frac{4}{3}, \frac{8}{3}, \frac{16}{3}, \frac{32}{3}, \frac{64}{3}$$

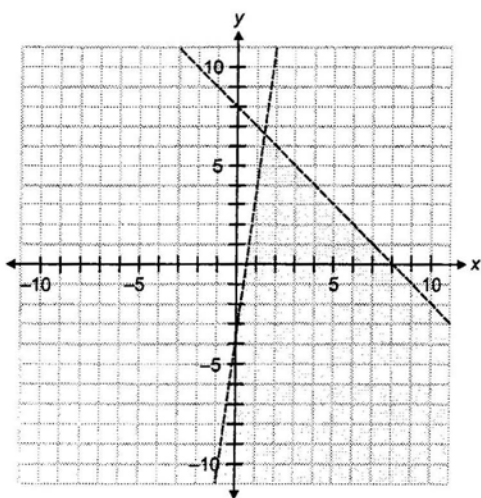
- a. The sequence is not a geometric sequence.
- b. 2
- c. 4
- d. 6

19. Graph the solution set of the system of inequalities below.

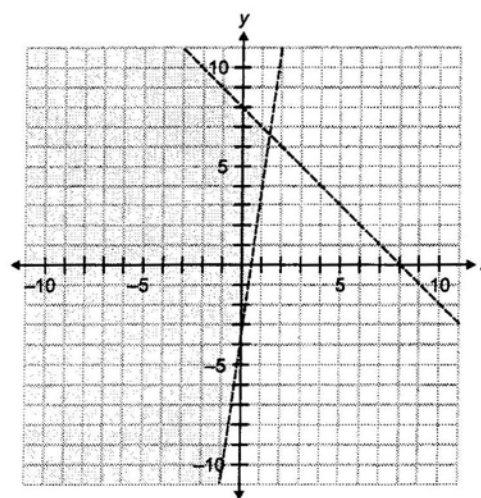
$$y < -x + 8$$

$$y > 8x - 3$$

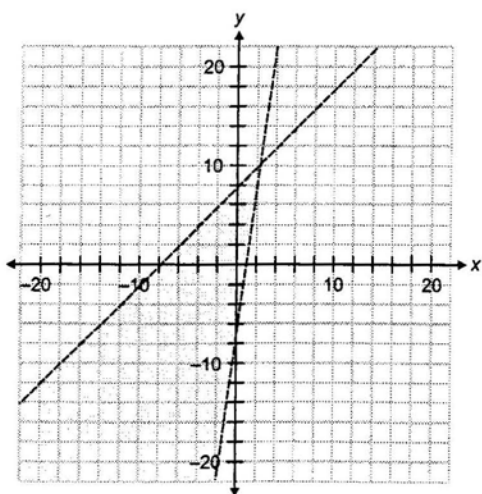
a.



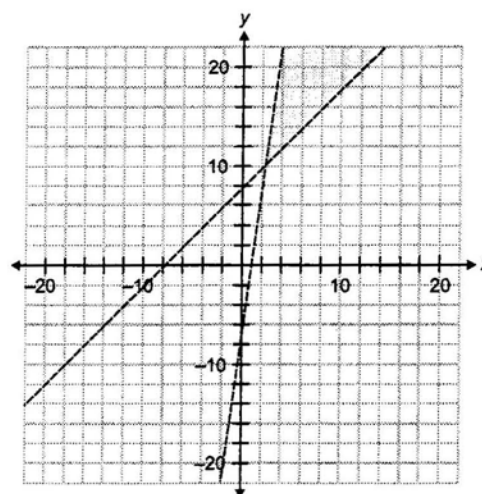
c.



b.

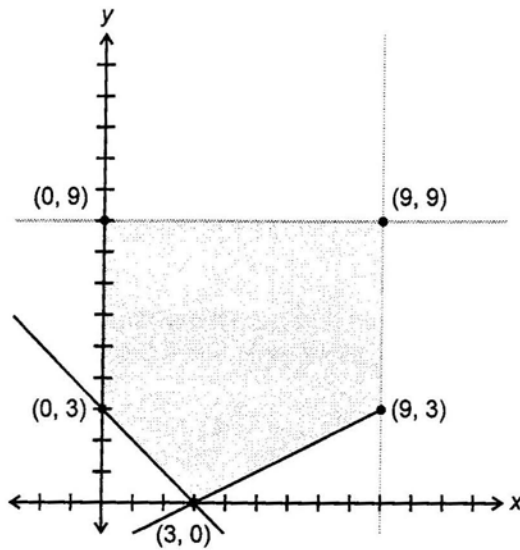


d.



20. Find the maximum and minimum values of the given objective function of a linear programming problem. The figure below illustrates the graph of the feasible points.

Objective function: $z = 5x + 8y$



- a. Maximum value: 69; minimum value: 24
- b. Maximum value: 69; minimum value: 15
- c. Maximum value: 117; minimum value: 24
- d. Maximum value: 117; minimum value: 15