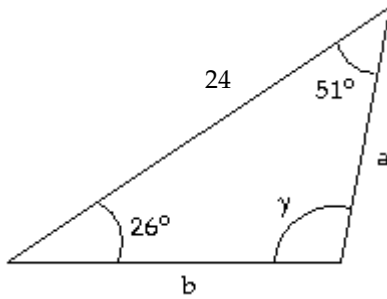


Name \_\_\_\_\_

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

**Solve the triangle with the given parts.**

1)



1) \_\_\_\_\_

A)  $\gamma = 103^\circ$ ,  $a = 19.1$ ,  $b = 10.8$

B)  $\gamma = 103^\circ$ ,  $a = 10.8$ ,  $b = 19.1$

C)  $\gamma = 97^\circ$ ,  $a = 10.6$ ,  $b = 18.8$

D)  $\gamma = 103^\circ$ ,  $a = 53.3$ ,  $b = 30.1$

**Determine the number of triangles with the given parts.**

2)  $a = 36$ ,  $b = 73$ ,  $\alpha = 79^\circ$

2) \_\_\_\_\_

A) 3

B) 1

C) 2

D) 0

3)  $a = 35$ ,  $b = 46$ ,  $\alpha = 27^\circ$

3) \_\_\_\_\_

A) 0

B) 1

C) 2

D) 3

4)  $a = 24$ ,  $b = 19$ ,  $\alpha = 41^\circ$

4) \_\_\_\_\_

A) 3

B) 2

C) 1

D) 0

**Solve the triangle. If there is more than one triangle with the given parts, give both solutions.**

5)  $\beta = 76.0^\circ$

$b = 11.01$

$a = 23.9$

5) \_\_\_\_\_

A)  $\alpha = 37^\circ$ ,  $\gamma = 66^\circ$ ,  $c = 36.91$

B) No solution

C)  $\alpha = 39^\circ$ ,  $\gamma = 66^\circ$ ,  $c = 38.91$

D)  $\alpha = 38^\circ$ ,  $\gamma = 66^\circ$ ,  $c = 34.91$

6)  $\beta = 17.52^\circ$

$b = 11.25$

$a = 18.69$

6) \_\_\_\_\_

A)  $\alpha = 30.01^\circ$ ,  $\gamma = 132.47^\circ$ ,  $c = 27.57$

B)  $\alpha = 149.99^\circ$ ,  $\gamma = 12.49^\circ$ ,  $c = 8.08$

C)  $\alpha = 30.01^\circ$ ,  $\gamma = 132.47^\circ$ ,  $c = 27.57$ ;

$\alpha' = 149.99^\circ$ ,  $\gamma' = 12.49^\circ$ ,  $c' = 8.08$

D) No solution

Approximate the area of the triangle to the nearest tenth.

7)  $\alpha = 36^\circ$ ,  $\gamma = 50^\circ$ ,  $b = 62.1$

A) 870.3

B) 891.4

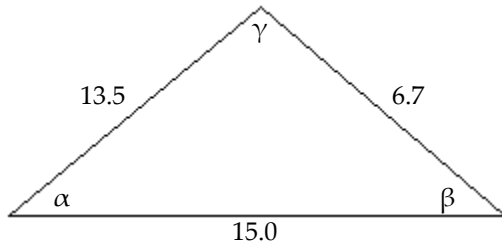
C) 878.6

D) 861.8

7) \_\_\_\_\_

Solve the triangle. Approximate values to the nearest tenth when appropriate.

8)



A)  $\alpha = 26.5^\circ$ ,  $\beta = 64.2^\circ$ ,  $\gamma = 89.3^\circ$

B)  $\alpha = 24.5^\circ$ ,  $\beta = 64.2^\circ$ ,  $\gamma = 91.3^\circ$

C)  $\alpha = 28.5^\circ$ ,  $\beta = 62.2^\circ$ ,  $\gamma = 89.3^\circ$

D) No solution

8) \_\_\_\_\_

Determine the number of triangles with the given parts.

9)  $a = 6$ ,  $b = 6$ ,  $c = 12$

A) 0

B) 1

C) 2

D) 3

9) \_\_\_\_\_

Approximate the area of the triangle to the nearest tenth.

10)  $a = 12.0$ ,  $b = 19.1$ ,  $c = 16.9$

A) 103.1

B) 109.1

C) 100.1

D) 106.1

10) \_\_\_\_\_

Solve.

11) Two airplanes leave an airport at the same time, one going northwest at 408 mph and the other going east at 337 mph. How far apart are the planes after 2 hours (to the nearest mile)?

A) 1147 mi

B) 689 mi

C) 1228 mi

D) 1378 mi

11) \_\_\_\_\_

Find the magnitude and direction angle (to the nearest tenth) for each vector. Give the measure of the direction angle as an angle in  $[0, 360^\circ]$ .

12)  $\langle -10\sqrt{2}, -10\sqrt{2} \rangle$

A) 20;  $45^\circ$

B) 40;  $45^\circ$

C) 20;  $225^\circ$

D)  $20\sqrt{2}$ ;  $135^\circ$

12) \_\_\_\_\_

Find the component form for the vector with the given magnitude and direction angle  $\theta$ . Round values to the nearest tenth.

13)  $|\mathbf{v}| = 101.3$ ,  $\theta = 288.4^\circ$

A)  $\langle 96.1, 32 \rangle$

B)  $\langle 32, -96.1 \rangle$

C)  $\langle 32, 96.1 \rangle$

D)  $\langle -96.1, 32 \rangle$

13) \_\_\_\_\_

Perform the indicated operation. Use the form  $\langle a, b \rangle$  for vectors.

14)  $\mathbf{v} = \langle 2, -2 \rangle$ ,  $\mathbf{w} = \langle -3, -5 \rangle$ ,  $\mathbf{u} = \langle 5, 2 \rangle$ ; Find  $\mathbf{v} + \mathbf{w} + 4\mathbf{u}$ .

A)  $\langle 19, 1 \rangle$

B)  $\langle 0, -8, 28 \rangle$

C)  $\langle -8, 28 \rangle$

D)  $\langle 4, -5 \rangle$

14) \_\_\_\_\_

15)  $\mathbf{u} = \langle -15, -8 \rangle$  and  $\mathbf{v} = \langle 12, -4 \rangle$ ; Find  $\mathbf{u} \cdot \mathbf{v}$ .

- A) -180                      B) -212                      C) 32                      D) -148

15) \_\_\_\_\_

**Find the angle between the given vectors to the nearest tenth of a degree.**

16)  $\langle 3, 6 \rangle, \langle 4, -5 \rangle$

- A)  $124.8^\circ$                       B)  $114.8^\circ$                       C)  $57.4^\circ$                       D)  $47.4^\circ$

16) \_\_\_\_\_

**State if the vectors  $\mathbf{a}$  and  $\mathbf{b}$  are perpendicular, parallel, or neither. If  $\mathbf{a}$  and  $\mathbf{b}$  are parallel, state whether they point in the same direction or in opposite directions.**

17)  $\mathbf{a} = \langle 12, 2 \rangle, \mathbf{b} = \langle 10, -6 \rangle$

- A) Parallel, opposite directions                      B) Perpendicular  
C) Parallel, same directions                      D) Neither

17) \_\_\_\_\_

18)  $\mathbf{a} = \langle 2, -6 \rangle, \mathbf{b} = \langle -8, 24 \rangle$

- A) Parallel, same direction                      B) Parallel, opposite directions  
C) Perpendicular                      D) Neither

18) \_\_\_\_\_

**Express the given vector as a linear combination of the unit vectors  $\mathbf{i}$  and  $\mathbf{j}$ .**

19)  $\langle -7, -7 \rangle$

- A)  $7\mathbf{i} + 7\mathbf{j}$                       B)  $14\mathbf{i} + \mathbf{j}$                       C)  $-7\mathbf{i} - 7\mathbf{j}$                       D)  $-7\mathbf{i} + 7\mathbf{j}$

19) \_\_\_\_\_

**Perform the operation on the given vectors and find the magnitude and direction angle for the new vector.**

20) Given  $\mathbf{A} = \langle 3, 2 \rangle$  and  $\mathbf{B} = \langle -2, 1 \rangle$

$\mathbf{A} + \mathbf{B}$

- A)  $\sqrt{10}, 71.6^\circ$                       B)  $\sqrt{11}, 251.6^\circ$                       C) 3,  $108.4^\circ$                       D) 4,  $76^\circ$

20) \_\_\_\_\_

**Find the absolute value of the complex number.**

21)  $9 - 6i$

- A)  $\sqrt{15}$                       B) 117                      C)  $3\sqrt{13}$                       D) 15

21) \_\_\_\_\_

**Write the complex number in trigonometric form, using degree measure for the argument.**

22)  $2\sqrt{3} - 2i$

- A)  $4(\cos 30^\circ + i \sin 30^\circ)$                       B)  $4(\cos(-60^\circ) + i \sin(-60^\circ))$   
C)  $4(\cos 150^\circ + i \sin 150^\circ)$                       D)  $4(\cos(330^\circ) + i \sin(330^\circ))$

22) \_\_\_\_\_

**Write the complex number in the form  $a + bi$ .**

23)  $\sqrt{6}(\cos 315^\circ + i \sin 315^\circ)$

- A)  $\sqrt{3} - \sqrt{3}i$                       B)  $\sqrt{6} - \sqrt{6}i$                       C)  $\frac{\sqrt{3}}{2} - \frac{\sqrt{3}}{2}i$                       D)  $\frac{\sqrt{6}}{2} - \frac{\sqrt{6}}{2}i$

23) \_\_\_\_\_

Perform the indicated operation. Write the answer in the form  $a + bi$ .

$$24) \frac{8(\cos \frac{\pi}{2} + i \sin \frac{\pi}{2})}{3(\cos \frac{\pi}{6} + i \sin \frac{\pi}{6})} \quad 24) \underline{\hspace{2cm}}$$

- A)  $8 + 8\sqrt{3}i$       B)  $\frac{4}{3} + \frac{4\sqrt{3}}{3}i$       C)  $\frac{5}{2} + \frac{5\sqrt{3}}{2}i$       D)  $1 + \sqrt{3}i$

$$25) [4(\cos 225^\circ + i \sin 225^\circ)] [6(\cos 225^\circ + i \sin 225^\circ)] \quad 25) \underline{\hspace{2cm}}$$

- A)  $24i$       B)  $24$       C)  $-24$       D)  $-24i$

Use De Moivre's theorem to simplify the expression. Write the answer in  $a + bi$  form.

$$26) \left(-\frac{1}{2} - \frac{\sqrt{3}}{2}i\right)^{10} \quad 26) \underline{\hspace{2cm}}$$

- A)  $\frac{1}{2} + \frac{\sqrt{3}}{2}i$       B)  $\frac{1}{2} - \frac{\sqrt{3}}{2}i$       C)  $-\frac{1}{2} + \frac{\sqrt{3}}{2}i$       D)  $-\frac{1}{2} - \frac{\sqrt{3}}{2}i$

Find all specified roots.

$$27) \text{Cube roots of } -8i \quad 27) \underline{\hspace{2cm}}$$

- A)  $-2i, \sqrt{3} + i, \sqrt{3} + i$       B)  $2i, -\sqrt{3} - i, \sqrt{3} - i$   
C)  $-2i, \sqrt{3} - i, \sqrt{3} - i$       D)  $2i, -\sqrt{3} + i, -\sqrt{3} + i$

## Answer Key

Testname: PRECAL REVIEW 2

- 1) B
- 2) D
- 3) C
- 4) C
- 5) B
- 6) C
- 7) A
- 8) A
- 9) A
- 10) C
- 11) D
- 12) C
- 13) B
- 14) A
- 15) D
- 16) B
- 17) B
- 18) B
- 19) C
- 20) A
- 21) C
- 22) D
- 23) A
- 24) B
- 25) A
- 26) D
- 27) B