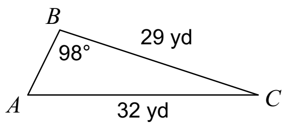
Acc. Precalculus Name________________________

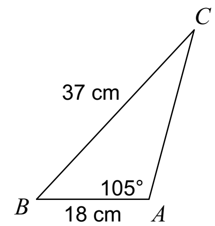
Fnal Exam Review

Find each measurement indicated. Round your answers to the nearest tenth.

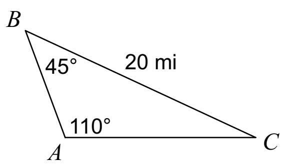
1) Find $m\angle A$



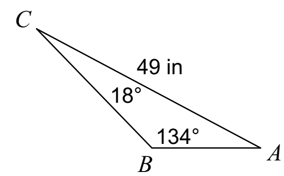
2) Find $m\angle C$



3) Find AC

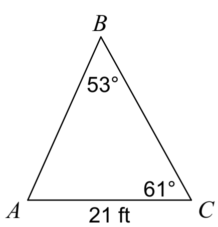


4) Find AB

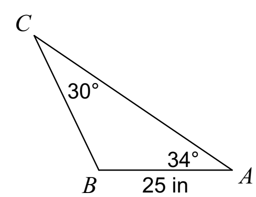


Solve each triangle. Round your answers to the nearest tenth.

5)

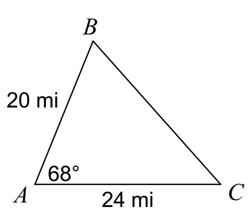


6)

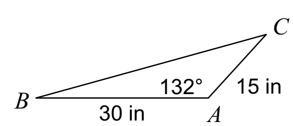


Find each measurement indicated. Round your answers to the nearest tenth.

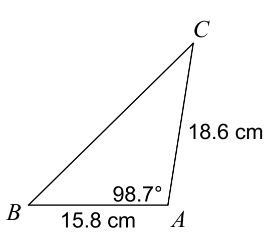
7) Find BC



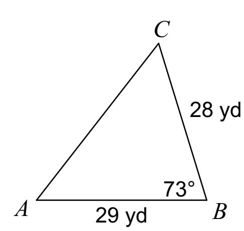
8) Find BC



9) Find $m\angle B$

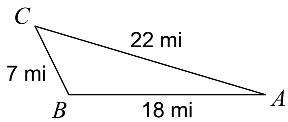


10) Find $m\angle C$



Solve each triangle. Round your answers to the nearest tenth.

11)



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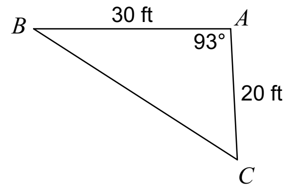
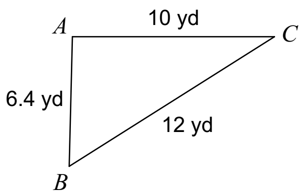


Find the area of each triangle to the nearest tenth.

13)



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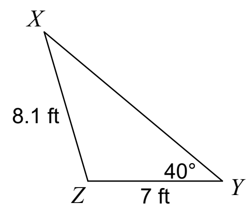
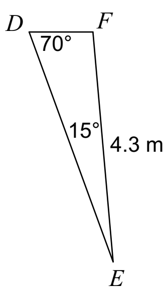
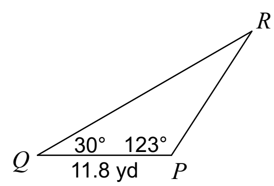


15)



16)



Solve each equation for $0 \le \theta < 360$.

17) $-2\tan\theta = -\frac{\sqrt{3}}{3} - 3\tan\theta$

18) $2\tan\theta = 1 + \tan\theta$

19) $2\cot\theta = \frac{\sqrt{3}}{3} + \cot\theta$

20) $\sqrt{3} - 3\cot\theta = -2\cot\theta$

21) $-2\cot\theta = 1 - 3\cot\theta$

22) $-1 + \csc\theta = -\sqrt{2} - 1$

Find the component form of the resultant vector.

23) $\mathbf{f} = \langle -1, -3 \rangle$
$\mathbf{g} = \langle -5, 4 \rangle$
Find: $\mathbf{f} + \mathbf{g}$

24) $\mathbf{f} = \langle 3, 1 \rangle$
Find: $\sqrt{2} \cdot \mathbf{f}$

Express the resultant vector as a linear combination of unit vectors i and j.

25) $\mathbf{u} = 8\mathbf{i} - 7\mathbf{j}$
$\mathbf{v} = 8\mathbf{i} + 9\mathbf{j}$
Find: $-\mathbf{u} + \mathbf{v}$

26) $\mathbf{u} = -6\mathbf{i} - 6\mathbf{j}$
Find: $\sqrt{2} \cdot \mathbf{u}$

Write each vector in component form.

27) $49\mathbf{i} + \mathbf{j}$

28) $41\mathbf{i} + 6\mathbf{j}$

29) $|\mathbf{k}| = 94, 338°$

30) $|\mathbf{b}| = 50, 228°$

Find the direction angle for each vector.

31) $\mathbf{v} = \langle -44, 18 \rangle$

32) $\overrightarrow{RS}$ where $R = (5, 8)$ $S = (2, -7)$

33) $6\mathbf{i} + 4\mathbf{j}$

34) $\mathbf{r} = \langle -15, -36 \rangle$

Find the dot product of the given vectors.

35) $\mathbf{u} = \langle -2, -3 \rangle$
$\mathbf{v} = \langle -8, 0 \rangle$

36) $\mathbf{u} = \langle 5, 6 \rangle$
$\mathbf{v} = \langle -2, -5 \rangle$

37) $\mathbf{u} = \langle 6, 7 \rangle$
$\mathbf{v} = \langle 1, 3 \rangle$

38) $\mathbf{u} = \langle 4, 0 \rangle$
$\mathbf{v} = \langle 4, 7 \rangle$

State if the two vectors are parallel, orthogonal, or neither.

39) $\mathbf{u} = \langle 2, -8 \rangle$
$\mathbf{v} = \langle -24, -6 \rangle$

40) $\mathbf{u} = \langle -10, -30 \rangle$
$\mathbf{v} = \langle -2, -6 \rangle$

41) $\mathbf{u} = \langle -3, -8 \rangle$
$\mathbf{v} = \left\langle \frac{64}{3}, -8 \right\rangle$

42) $\mathbf{u} = \langle -16, 10 \rangle$
$\mathbf{v} = \langle 5, 8 \rangle$

Find the component form of the resultant vector.

43) $\mathbf{u} = \langle -4, -5\sqrt{33} \rangle$
Unit vector in the direction of **u**

44) $\mathbf{u} = \langle 5, -12 \rangle$
Unit vector in the direction of **u**

Find the measure of the angle between the two vectors.

45) $\mathbf{u} = \langle -3, 3 \rangle$
$\mathbf{v} = \langle -1, 8 \rangle$

46) $\mathbf{u} = \langle -6, 3 \rangle$
$\mathbf{v} = \langle -5, -4 \rangle$

Find the projection of u onto v. Then write u as the sum of two orthogonal vectors.

47) $\mathbf{u} = \langle -9, -7 \rangle$
$\mathbf{v} = \langle -2, -4 \rangle$

48) $\mathbf{u} = \langle 9, 8 \rangle$
$\mathbf{v} = \langle 1, -3 \rangle$

Write each vector in component form and as a linear combination, if not provided. Then find the magnitude.

49) $\mathbf{r} = \langle -9, 8, -1 \rangle$

50) $\mathbf{r} = -8\mathbf{i} + 5\mathbf{j} + 2\mathbf{k}$

Find the cross product of the given vectors.

51) $\mathbf{a} \times \mathbf{b}$
$\mathbf{a} = \langle 1, 9, 6 \rangle$
$\mathbf{b} = \langle 6, -9, 9 \rangle$

52) $\mathbf{u} \times \mathbf{v}$
$\mathbf{u} = \langle 3, 4, 6 \rangle$
$\mathbf{v} = \langle 5, 7, 7 \rangle$

Find the area of a parallelogram with the given vectors as two adjacent sides.

53) $\mathbf{u} = \langle 1, -8, 2 \rangle$
$\mathbf{v} = \langle -4, -8, -9 \rangle$

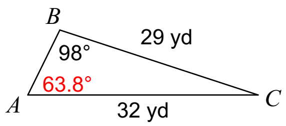
54) $\mathbf{a} = \langle -8, -2, 3 \rangle$
$\mathbf{b} = \langle -7, 1, -7 \rangle$

Acc. Precalculus Name______________________

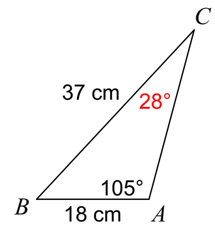
Fnal Exam Review

Find each measurement indicated. Round your answers to the nearest tenth.

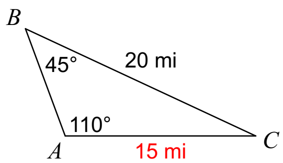
1) Find $m\angle A$



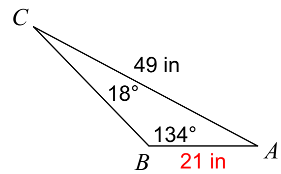
2) Find $m\angle C$



3) Find AC

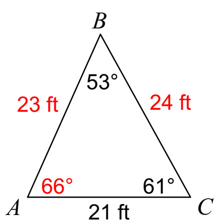


4) Find AB

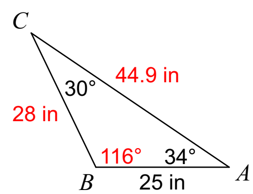


Solve each triangle. Round your answers to the nearest tenth.

5)

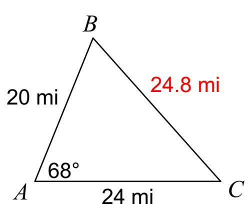


6)

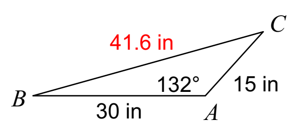


Find each measurement indicated. Round your answers to the nearest tenth.

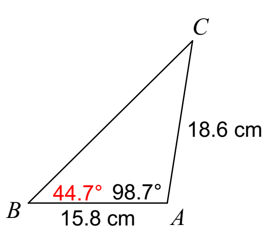
7) Find BC



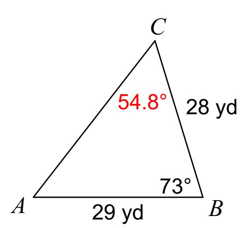
8) Find BC



9) Find $m\angle B$

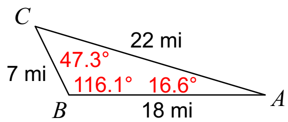


10) Find $m\angle C$

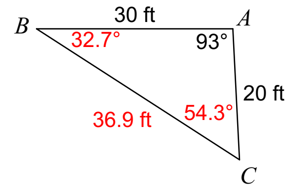


Solve each triangle. Round your answers to the nearest tenth.

11)

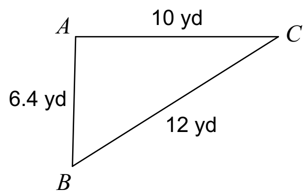


12)



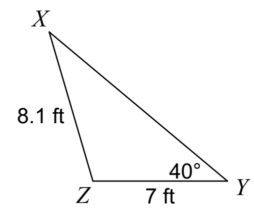
Find the area of each triangle to the nearest tenth.

13)



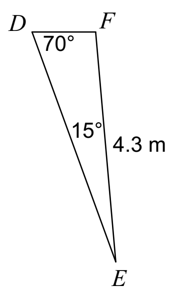
32 yd²

14)



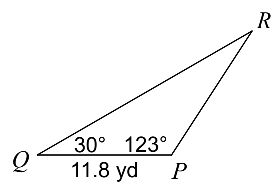
27.2 ft²

15)



2.6 m²

16)



64.3 yd²

Solve each equation for $0 \le \theta < 360$.

17) $-2\tan\,\theta = -\frac{\sqrt{3}}{3} - 3\tan\,\theta$

$\{150,\ 330\}$

18) $2\tan\,\theta = 1 + \tan\,\theta$

$\{45,\ 225\}$

19) $2\cot\,\theta = \frac{\sqrt{3}}{3} + \cot\,\theta$

$\{60,\ 240\}$

20) $\sqrt{3} - 3\cot\,\theta = -2\cot\,\theta$

$\{30,\ 210\}$

21) $-2\cot\,\theta = 1 - 3\cot\,\theta$

$\{45,\ 225\}$

22) $-1 + \csc\,\theta = -\sqrt{2} - 1$

$\{225,\ 315\}$

Find the component form of the resultant vector.

23) $\mathbf{f} = \langle -1, -3 \rangle$
$\mathbf{g} = \langle -5, 4 \rangle$
Find: $\mathbf{f} + \mathbf{g}$

$\langle -6, 1 \rangle$

24) $\mathbf{f} = \langle 3, 1 \rangle$
Find: $\sqrt{2} \cdot \mathbf{f}$

$\langle 3\sqrt{2}, \sqrt{2} \rangle$

Express the resultant vector as a linear combination of unit vectors i and j.

25) $\mathbf{u} = 8\mathbf{i} - 7\mathbf{j}$
$\mathbf{v} = 8\mathbf{i} + 9\mathbf{j}$
Find: $-\mathbf{u} + \mathbf{v}$

$16\mathbf{j}$

26) $\mathbf{u} = -6\mathbf{i} - 6\mathbf{j}$
Find: $\sqrt{2} \cdot \mathbf{u}$

$-6\sqrt{2} \cdot \mathbf{i} - 6\sqrt{2} \cdot \mathbf{j}$

Write each vector in component form.

27) $49\mathbf{i} + \mathbf{j}$

$\langle 49, 1 \rangle$

28) $41\mathbf{i} + 6\mathbf{j}$

$\langle 41, 6 \rangle$

29) $|\mathbf{k}| = 94, 338°$

$\langle 87.16, -35.21 \rangle$

30) $|\mathbf{b}| = 50, 228°$

$\langle -33.46, -37.16 \rangle$

Find the direction angle for each vector.

31) $\mathbf{v} = \langle -44, 18 \rangle$

157.75°

32) $\overrightarrow{RS}$ where $R = (5, 8)$ $S = (2, -7)$

258.69°

33) $6\mathbf{i} + 4\mathbf{j}$

33.69°

34) $\mathbf{r} = \langle -15, -36 \rangle$

247.38°

Find the dot product of the given vectors.

35) $\mathbf{u} = \langle -2, -3 \rangle$
$\mathbf{v} = \langle -8, 0 \rangle$

16

36) $\mathbf{u} = \langle 5, 6 \rangle$
$\mathbf{v} = \langle -2, -5 \rangle$

-40

37) $\mathbf{u} = \langle 6, 7 \rangle$
$\mathbf{v} = \langle 1, 3 \rangle$

27

38) $\mathbf{u} = \langle 4, 0 \rangle$
$\mathbf{v} = \langle 4, 7 \rangle$

16

State if the two vectors are parallel, orthogonal, or neither.

39) $\mathbf{u} = \langle 2, -8 \rangle$
$\mathbf{v} = \langle -24, -6 \rangle$

Orthogonal

40) $\mathbf{u} = \langle -10, -30 \rangle$
$\mathbf{v} = \langle -2, -6 \rangle$

Parallel

41) $\mathbf{u} = \langle -3, -8 \rangle$
$\mathbf{v} = \left\langle \frac{64}{3}, -8 \right\rangle$

Orthogonal

42) $\mathbf{u} = \langle -16, 10 \rangle$
$\mathbf{v} = \langle 5, 8 \rangle$

Orthogonal

Find the component form of the resultant vector.

43) $\mathbf{u} = \langle -4, -5\sqrt{33} \rangle$
Unit vector in the direction of **u**

$\left\langle -\frac{4}{29}, -\frac{5\sqrt{33}}{29} \right\rangle$

44) $\mathbf{u} = \langle 5, -12 \rangle$
Unit vector in the direction of **u**

$\left\langle \frac{5}{13}, -\frac{12}{13} \right\rangle$

Find the measure of the angle between the two vectors.

45) $\mathbf{u} = \langle -3, 3 \rangle$
$\mathbf{v} = \langle -1, 8 \rangle$

$37.87°$

46) $\mathbf{u} = \langle -6, 3 \rangle$
$\mathbf{v} = \langle -5, -4 \rangle$

$65.22°$

Find the projection of u onto v. Then write u as the sum of two orthogonal vectors.

47) $\mathbf{u} = \langle -9, -7 \rangle$
$\mathbf{v} = \langle -2, -4 \rangle$

$\left\langle -\frac{23}{5}, -\frac{46}{5} \right\rangle$

$\mathbf{u} = \left\langle -\frac{23}{5}, -\frac{46}{5} \right\rangle + \left\langle -\frac{22}{5}, \frac{11}{5} \right\rangle$

48) $\mathbf{u} = \langle 9, 8 \rangle$
$\mathbf{v} = \langle 1, -3 \rangle$

$\left\langle -\frac{3}{2}, \frac{9}{2} \right\rangle$

$\mathbf{u} = \left\langle -\frac{3}{2}, \frac{9}{2} \right\rangle + \left\langle \frac{21}{2}, \frac{7}{2} \right\rangle$

Write each vector in component form and as a linear combination, if not provided. Then find the magnitude.

49) $\mathbf{r} = \langle -9, 8, -1 \rangle$ $-9\mathbf{i} + 8\mathbf{j} - \mathbf{k}$
$\sqrt{146} \approx 12.083$

50) $\mathbf{r} = -8\mathbf{i} + 5\mathbf{j} + 2\mathbf{k}$ $\langle -8, 5, 2 \rangle$
$\sqrt{93} \approx 9.644$

Find the cross product of the given vectors.

51) $\mathbf{a} \times \mathbf{b}$
$\mathbf{a} = \langle 1, 9, 6 \rangle$
$\mathbf{b} = \langle 6, -9, 9 \rangle$

$\langle 135, 27, -63 \rangle$

52) $\mathbf{u} \times \mathbf{v}$
$\mathbf{u} = \langle 3, 4, 6 \rangle$
$\mathbf{v} = \langle 5, 7, 7 \rangle$

$\langle -14, 9, 1 \rangle$

Find the area of a parallelogram with the given vectors as two adjacent sides.

53) $\mathbf{u} = \langle 1, -8, 2 \rangle$
$\mathbf{v} = \langle -4, -8, -9 \rangle$
$\sqrt{9345} \approx 96.67$ $units^2$

54) $\mathbf{a} = \langle -8, -2, 3 \rangle$
$\mathbf{b} = \langle -7, 1, -7 \rangle$
$33\sqrt{6} \approx 80.833$ $units^2$

