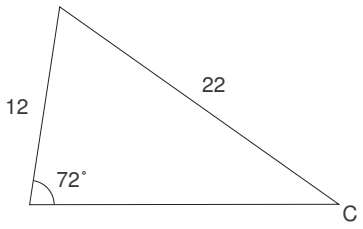
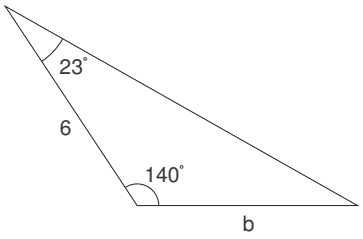
MATH 11022 SPRING 2011 EXAM 3 WEB VERSION NAME: _____

SHOW ALL WORK FOR FULL CREDIT — CIRCLE YOUR FINAL ANSWER
GIVE ANSWERS TO **TWO** DECIMAL PLACES — ALL FIGURES ARE NOT DRAWN TO SCALE
CARRY ALL INTERMEDIATE CALCULATIONS OUT TO AT LEAST **FOUR** DECIMAL PLACES

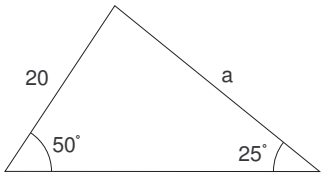
1. Solve for angle C. Here, C is acute.



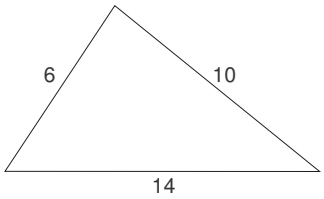
2. Solve for b.



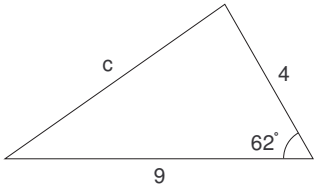
3. Solve for a.



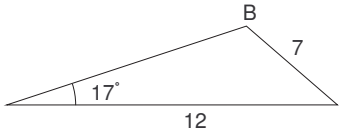
4. Find the area of the following triangle. All measurements are in centimeters.



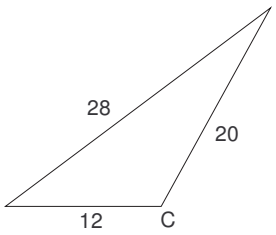
5. Solve for c.



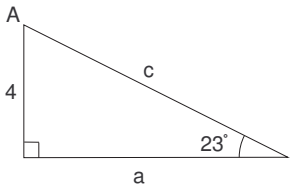
6. Solve for angle B. Here, B is obtuse.



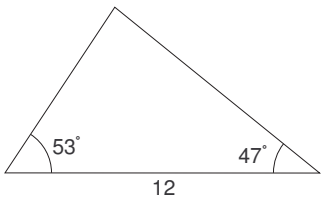
7. Solve for angle C.



8. Solve the triangle. (That is, find A, a, c.)



9. Find the area of the following triangle. All measurements are in centimeters.



10. Find the period of

$$y = \tan(8x - \pi)$$

and sketch the graph of one cycle. Be sure to indicate the spacing along the x axis.

11. Find the period of

$$y = 7\sec(4x - \pi)$$

and sketch the graph of one cycle. Be sure to indicate the spacing along the x and y axes.

12. Find the amplitude, period, and phase shift of

$$y = \frac{1}{9}\cos\left(\frac{\pi}{24}x + \frac{\pi}{2}\right)$$

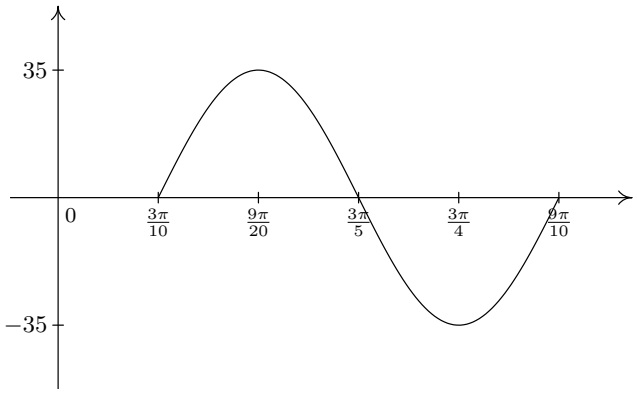
and sketch the graph of one cycle. Be sure to indicate the spacing along the x and y axes.

13. Find the amplitude, period, and phase shift of

$$y = -14 \sin\left(\frac{1}{30}x - \frac{\pi}{5}\right)$$

and sketch the graph of one cycle. Be sure to indicate the spacing along the x and y axes.

14. Find the amplitude, period, phase shift, and equation of the following sinusoid:



ANSWERS

1. $C = 31.25°$

2. $b = 8.02$

3. $a = 36.25$

4. $25.98\,\text{cm}^2$

5. $c = 7.95$

6. $B = 149.92°$

7. $C = 120°$

8. $A = 67°; \quad a = 9.42; \quad c = 10.24$

9. $42.70\,\text{cm}^2$

10. One cycle: $\boxed{\frac{\pi}{16} < x < \frac{3\pi}{16}}$
    Period $= \pi/8$;
    Vertical asymptotes at $x = \pi/16,\ 3\pi/16$;
    x-intercept at $(\pi/8, 0)$

11. One cycle: $\boxed{\frac{\pi}{4} \le x \le \frac{3\pi}{4}}$
    Period $= \pi/2$;
    x-axis spacing: $\pi/4,\ 3\pi/8,\ \pi/2,\ 5\pi/8,\ 3\pi/4$;
    Vertical asymptotes at $x = 3\pi/8,\ 5\pi/8$

12. One cycle: $\boxed{-12 \le x \le 36}$
    Amplitude $= 1/9$;
    Period $= 48$;
    Phase shift $= -12$;
    x-axis spacing: $-12,\ 0,\ 12,\ 24,\ 36$

13. One cycle: $\boxed{6\pi \le x \le 66\pi}$
    Amplitude $= 14$;
    Period $= 60\pi$;
    Phase shift $= 6\pi$;
    x-axis spacing: $6\pi,\ 21\pi,\ 36\pi,\ 51\pi,\ 66\pi$

14. Amplitude $= 35$;
    Period $= 3\pi/5$;
    Phase shift $= 3\pi/10$;
    Equation: $\boxed{y = 35\sin\left(\frac{10}{3}x - \pi\right)}$