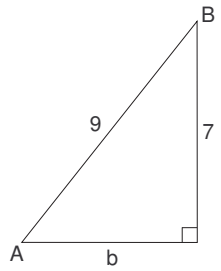
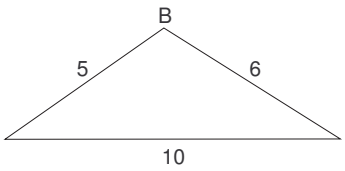
MATH 11022 FALL 2009 EXAM 3 WEB VERSION NAME: _____

SHOW ALL WORK FOR FULL CREDIT—PLEASE CIRCLE YOUR FINAL ANSWER
GIVE ANSWERS TO **TWO** DECIMAL PLACES—ALL FIGURES ARE **NOT** DRAWN TO SCALE

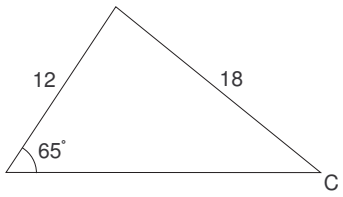
1. Solve the triangle. (i.e., find A, B, and b).



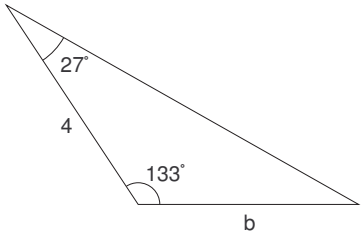
2. Solve for angle B.



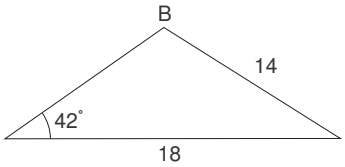
3. Solve for angle C. Here angle C is acute.



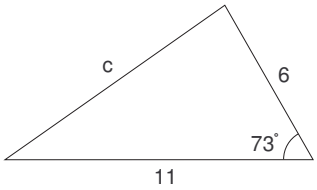
4. Solve for b.



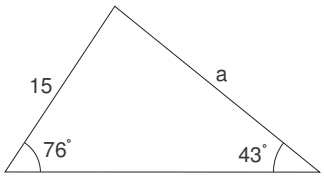
5. Solve for angle B. Here angle B is obtuse.



6. Solve for c.



7. Solve for a.



8. Find the period of

$$y = \tan\left(2x - \frac{\pi}{3}\right)$$

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

9. Find the period of

$$y = 8\sec\left(4x - \frac{\pi}{2}\right)$$

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

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

$$y = -\frac{1}{3}\sin\left(\frac{1}{40}x - \frac{\pi}{10}\right)$$

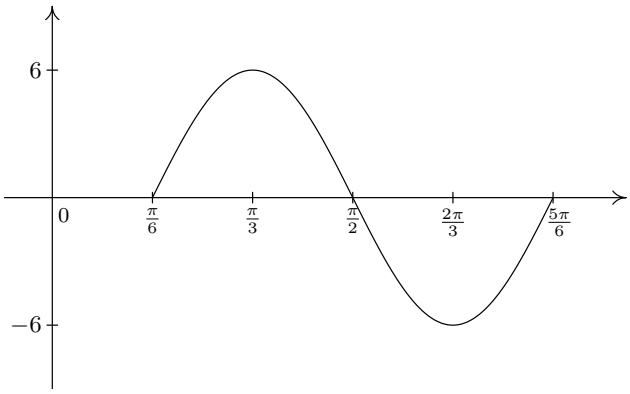
and sketch the graph of one cycle. Be sure to indicate the spacing along the x and y axes.

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

$$y = 5\cos\left(\frac{1}{6}x + \frac{\pi}{2}\right)$$

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

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



ANSWERS

1. $A = 51.06°; \quad B = 38.94°; \quad b = 5.66$

2. $B = 130.54°$

3. $C = 37.17°$

4. $b = 5.31$

5. $B = 120.65°$

6. $c = 10.88$

7. $a = 21.34$

8. One cycle: $\boxed{-\frac{\pi}{12} < x < \frac{5\pi}{12}}$
   Period $= \pi/2$;
   Vertical asymptotes at $x = -\pi/12, \ 5\pi/12$;
   x-intercept at $(\pi/6, 0)$

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

10. One cycle: $\boxed{4\pi \leq x \leq 84\pi}$
    Amplitude $= 1/3$;
    Period $= 80\pi$;
    Phase shift $= 4\pi$;
    x-axis spacing: $4\pi, \ 24\pi, \ 44\pi, \ 64\pi, \ 84\pi$

11. One cycle: $\boxed{-3\pi \leq x \leq 9\pi}$
    Amplitude $= 5$;
    Period $= 12\pi$;
    Phase shift $= -3\pi$;
    x-axis spacing: $-3\pi, \ 0, \ 3\pi, \ 6\pi, \ 9\pi$

12. Amplitude $= 6$;
    Period $= 2\pi/3$;
    Phase shift $= \pi/6$;
    Equation: $\boxed{y = 6\sin\left(3x - \frac{\pi}{2}\right)}$