1. A model rocket is launched with an initial upward velocity of 164ft/s. The rocket's height h (in feet) after t seconds is given by $h = 164t - 16t^2$. When will the rocket be 92ft high? (Include units!)
2. Solve each inequality. Write your answers in interval notation.
   (a) $3|y-6|+4 > 1$
   (b) $|y+8| < 88$
3. In this problem you will sketch the graph of $f(x) = 9 - 3|x+5|$. But first:
   (a) Find the domain.
   (b) Find all intercepts (if any). Write each intercept as an ordered pair (x,y).
   (c) Sketch the graph. Be sure to label your axes, intercepts, and any other interesting points.
   (d) Find the range.
4. Solve each equation for y.
   (a) $\dfrac{y}{y+4} + \dfrac{3}{y+5} = \dfrac{y+2}{y^2+9y+20}$
   (b) $4 + \sqrt{y} = \sqrt{y+56}$
   (c) $\dfrac{x}{6+y} = W$
5. Solve each equation for w.
   (a) $\log_w \dfrac{1}{100} = -2$
   (b) $\ln 2 + \ln(w-3) = -2$
   (c) $3^{7-w} = 11^{9w}$
6. In this problem you will sketch the graph of $f(x) = 3 + 4^{x+2}$. But first:
   (a) Find the domain.
   (b) Find all intercepts (if any). Write each intercept as an ordered pair (x,y).
   (c) Find all asymptotes (if any). Write each asymptote as the equation of a line.
   (d) Sketch the graph. Be sure to label your axes as well as all intercepts and asymptotes.
   (e) Find the range.
7. A bacterial colony has area 2 square millimeters. The area of the colony increases by 40% every hour. When will the area of the colony be 50 square millimeters? (Include units!)
8. Solve each inequality. Write your answers in interval notation.
   (a) $x^2 - 2x < 8$
   (b) $(x-8)(x-4)(x+2) \geq 0$
   (c) $\dfrac{x-5}{x-1} \leq 0$
9. In this problem you will sketch the graph of $f(x) = \dfrac{(x-1)^2}{x-3}$. But first:
   (a) Find the domain.
   (b) Find all intercepts (if any). Write each intercept as an ordered pair (x,y).
   (c) The graph has *two* asymptotes; find both. Write each asymptote as the equation of a line.

(d) Sketch the graph. Be sure to label your axes as well as all intercepts and asymptotes.

10. Graph each function. Include at least two periods. Be sure to label your axes, as well as all intercepts, asymptotes, maxima, and minima.
    (a) $2\sin(x/4)$
    (b) $-3\cos(2x)$
    (c) $5\sec x$
11. Evaluate.
    (a) $\sin\left(\frac{19\pi}{6}\right)$
    (b) $\cos\left(\frac{35\pi}{3}\right)$
    (c) $\sec\left(\frac{-21\pi}{4}\right)$
    (d) $\csc\left(\frac{41\pi}{2}\right)$
    (e) $\tan\left(\frac{-29\pi}{6}\right)$
    (f) $\cot(17\pi)$
12. Evaluate.
    (a) $\arcsin\left(\frac{\sqrt{3}}{2}\right)$
    (b) $\arccos\left(\frac{-1}{2}\right)$
    (c) $\arctan(-1)$
13. Find ALL solutions to each equation.
    (a) $\sin x = \frac{-1}{2}$
    (b) $\cos x = \frac{2}{5}$
    (c) $\tan x = 0.9$
14. Simplify as much as possible.
    (a) $\frac{\cos x \sec x}{\tan x}$
    (b) $\cos^2 x + \sin x \tan x \cos x$
    (c) $\cot x \sec x$
15. Simplify as much as possible.
    (a) $\csc\left(\arccos\left(\frac{\sqrt{3}}{2}\right)\right)$
    (b) $\sin(\arctan(8))$
    (c) $\sec(\arcsin(x))$