Calculus
Chapter 1 In Class Review

For questions 1 and 2, sketch each without a calculator and write a statement describing the parent function and its transformation.

1. $y = -\log(x-1)$

2. $y = \begin{cases} -x & -1 \le x < 0 \\ 4 & 0 \le x < 1 \\ x+5 & 1 \le x \le 2 \end{cases}$

3. Prove whether the function is odd or even: $y = x^3 - 5x$

4. Change to base 10. $\log_7 14$

5. Find k in the equation $3y + kx = 4$
   a) to make the line horizontal
   b) to make the line parallel to $y = 3x + 5$

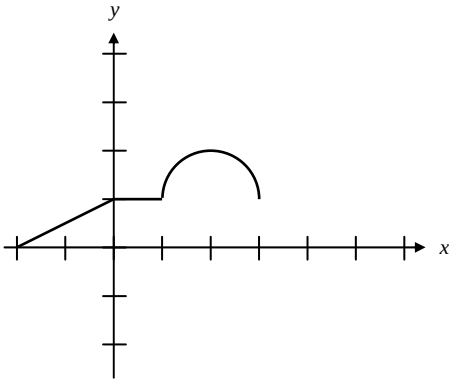
6. Find the equation of the line perpendicular to $y = -3x + 5$ that goes through (4, 1).

7. Graph the parametric equation $x(t) = 2\sec(t)$, and change to a Cartesian equation.
   $y(t) = \tan(t) - 1$

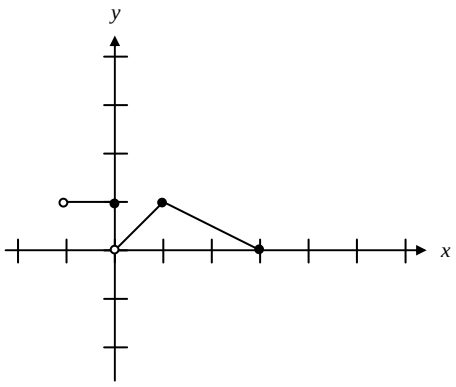
8. Solve for x given the domain restrictions.

a) $\sin^{-1}\left(\frac{1}{2}\right) = x$ b) $\sin x = \frac{1}{2}$ if $0 \le x \le 2\pi$ c) $\sin x = \frac{1}{2}$ if $-\infty < x < \infty$

9. $k(x)$ is shown.
   a) Graph $y = -2k(x)$
   b) Graph $y = k(2x-4)$



10. $h(x)$ is shown. Write the equation for $h(x)$.



11. If $\ln(x) - \ln\left(\frac{1}{x}\right) = 2$, solve for x.

12. If $f(x) = \dfrac{4}{x-1}$ and $g(x) = 2x$, then the solution set of $f(g(x)) = g(f(x))$ is

A) $\frac{1}{3}$ B) 2 C) 3 D) -1 and 2 E) $\frac{1}{3}$ and 2

13. $\ln(x-2) < 0$ if and only if

A) $x < 3$ B) $0 < x < 3$ C) $2 < x < 3$ D) $x > 2$ E) $x > 3$

14. Which of the following define a function f for which $f(-x) = -f(x)$?

A) $f(x) = x^2$ B) $f(x) = \sin x$ C) $f(x) = \cos x$ D) $f(x) = \log x$ E) $f(x) = e^x$