Name: _____

Practice Test 2 for Calculus I (151I and L)

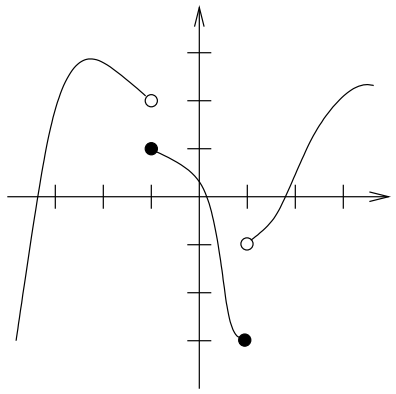
1. Suppose that $\sin\theta = \frac{-1}{4}$, and that $-\pi/2 < \theta < 0$. Find the $\cos\theta$, $\tan\theta$, $\csc\theta$, $\sec\theta$, and $\cot\theta$.

2. Find $\sin x$, $\cos x$, and $\tan x$ if $x = \frac{4\pi}{3}$.

3. (a) Describe how to obtain the graph of $y = 2f(4x)$ from the graph of $y = f(x)$.
   (b) Graph $y = 2\sin(4x)$. Label the intercepts and the vertex of the parabola.

4. Evaluate the infinite limit. (Determine whether the limit is $\pm\infty$.)
   (a) $\lim_{x \to \left(\frac{\pi}{2}\right)^-} \sec x.$
   (b) $\lim_{x \to -1^+} \dfrac{1}{x(x+1)}.$

5. On which intervals is the given function continuous? There are two numbers at which the given function is discontinuous. Determine whether the function is continuous from the left or right at each of these discontinuities. (The distance between each pair of consecutive marks on the coordinate axes is 1 unit.)



6. Evaluate:

$$\lim_{t \to 0^+} \frac{\sqrt{1+t^2}-1}{t}.$$

7. Evaluate:

$$\lim_{x \to 3} \frac{\sqrt{x+1} - 2}{x - 3}.$$

8. Evaluate:

$$\lim_{x \to 4} \frac{\frac{1}{x^2} - \frac{1}{16}}{x - 4}.$$

9. Evaluate:

$$\lim_{x \to 2} \frac{x^2 - 3x + 2}{x^2 + x - 6}.$$

10. Evaluate:

$$\lim_{x \to 8} \frac{x^2 - x}{x^2 + x - 10}.$$

11. Find the value of a that makes f continuous everywhere.

$$f(x) = \begin{cases} ax & x \leq 2 \\ ax^2 + x + 1 & x > 2 \end{cases}$$

(Hint: You will want to take limits from the left and right at 2, and compare the results.)

12. Show that $2^x = x^3$, for some number x. (Hint: use the Intermediate Value Theorem to find a place where the function defined by the rule $f(x) = 2^x - x^3$ is zero.)