

Name: _____

Practice Test 1 for Calculus I (151I and L)

1. Suppose that $\sin \theta = \frac{2}{3}$, and that $\frac{\pi}{2} < \theta < \pi$. Find the $\cos \theta$, $\tan \theta$, $\csc \theta$, $\sec \theta$, and $\cot \theta$.

2. Find $\sin x$, $\cos x$, and $\tan x$ if $x = \frac{5\pi}{6}$.

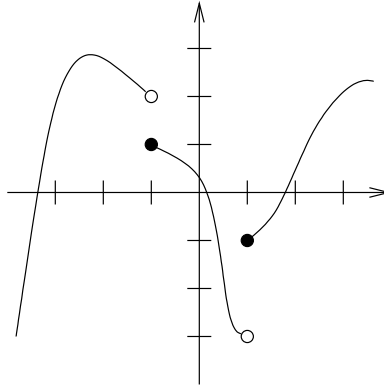
3. (a) Describe how to obtain the graph of $y = -f(x - 2) + 4$ from the graph of $y = f(x)$.
(b) Graph $y = -(x - 2)^2 + 4$. Label the intercepts and the vertex of the parabola.

4. Evaluate the infinite limit. (Determine whether the limit is $\pm\infty$.)

(a) $\lim_{x \rightarrow (\frac{\pi}{2})^+} \tan x$.

(b) $\lim_{x \rightarrow 4^-} \frac{x^2 - 12x + 20}{x^2 - 16}$.

5. Evaluate the limits using the picture. (The distance between each pair of adjacent marks on the coordinate axes is 1 unit.)



- (a) $\lim_{x \rightarrow -1^+} f(x)$.
 (b) $\lim_{x \rightarrow -1^-} f(x)$.
 (c) $\lim_{x \rightarrow -1} f(x)$.
 (d) $\lim_{x \rightarrow 1^+} f(x)$.
 (e) $\lim_{x \rightarrow 1^-} f(x)$.
 (f) $\lim_{x \rightarrow 1} f(x)$.

6. Evaluate:

$$\lim_{t \rightarrow 0^+} \left(\frac{1}{t} - \frac{t}{t^2 + 1} \right).$$

7. Evaluate:

$$\lim_{x \rightarrow 1} \frac{\sqrt{x+8} - 3}{x-1}.$$

8. Evaluate:

$$\lim_{x \rightarrow 3} \frac{\frac{1}{x^2} - \frac{1}{9}}{x-3}.$$

9. Evaluate:

$$\lim_{x \rightarrow 2} \frac{x^2 + x - 2}{x^2 + 4x + 3}.$$

10. Evaluate:

$$\lim_{x \rightarrow 5} \frac{x^2 - x - 20}{x^2 + x - 30}.$$

11. Find the values of a and b that make f continuous everywhere.

$$f(x) = \begin{cases} \frac{x^2-4}{x-2} & x \leq 2 \\ ax^2 - bx + 3 & 2 < x < 3 \\ 2x - a + b & 3 \leq x \end{cases}$$

(Hint: You will want to take limits from the left and right at 2 and 3, and compare the results.)

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