

Name: _____

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

1. $\sin \theta = \frac{2}{3}$; $\cos \theta = \frac{-\sqrt{5}}{3}$; $\tan \theta = \frac{-2}{\sqrt{5}}$; $\csc \theta = \frac{3}{2}$; $\sec \theta = \frac{-3}{\sqrt{5}}$; $\cot \theta = \frac{-\sqrt{5}}{2}$.

2. $\sin\left(\frac{5\pi}{6}\right) = \frac{1}{2}$; $\cos\left(\frac{5\pi}{6}\right) = \frac{-\sqrt{3}}{2}$; $\tan\left(\frac{5\pi}{6}\right) = \frac{-1}{\sqrt{3}}$.

3. (a) First, graph $y = f(x)$. Shift this graph to the right two units, then reflect across the x -axis, then shift up four units.

(b) (omitted. Try to work it out from the previous part.)

4. (a) $-\infty$.

(b) ∞ .

5. (a) 1.

(b) 2.

(c) DNE

(d) -1 .

(e) -3 .

(f) DNE

6. ∞ .

7. $1/6$.

8. $-2/27$.

9. $4/15$.

10. $9/11$.

11. $a = b = 1/2$.

12. Consider the function $f(x) = x - \cos x$. The function f is continuous on $(-\infty, \infty)$. $f(2) = 2 - \cos 2 \geq 1$, and $f(0) = 0 - \cos 0 = -1$. Since f is continuous on $[0, 2]$ and 0 is strictly between -1 and $f(2)$, there must be some d in $(0, 2)$ such that $f(d) = 0$, by the IVT. This means that $d - \cos d = 0$, so $d = \cos d$.