This test is in two parts. On part one, you may not use a calculator; on part two, a calculator is necessary. When you complete part one, you turn it in and get part two. Once you have turned in part one, you may not go back to it.

PART ONE - NO CALCULATORS ALLOWED

(1) Find each of the following:

(a) $\cos(30°)=$ _____

(b) $\csc(3\pi/4) =$ _____

(c) $\sec(\pi)=$ _____

(d) $\tan^{-1}(-\sqrt{3}) =$ _____

(e) $\sin^{-1}(-\sqrt{3}/2)=$ _____

(f) $\cos(5\pi/3) =$ _____

(g) $\tan^{-1} 0 =$ _____

(h) $\tan 90° =$ _____

(i) $\cos^{-1}\left(\dfrac{-\sqrt{2}}{2}\right)=$ _____

(j) $\sin^{-1}(1)=$ _____

(k) $\cos(120°) =$ _____

(l) $\cos(3\pi) =$ _____

(m) $\sin(9\pi/2) =$ _____

(n) $\cot(5\pi/4)=$ _____

(o) $\tan(-45°) =$ _____

(p) $\sin(315°) =$ _____

(q) $\cos\left(\dfrac{4\pi}{3}\right)=$ _____

(r) $\cos^{-1}(-1) =$ _____

(s) $\sin^{-1}\left(\dfrac{-\sqrt{2}}{2}\right) =$ _____

(t) $\sin^{-1}(1) =$ _____

(2) In what quadrant is each of the following angles?:

(a) $\beta = \cos^{-1}(-1/3)$ _____

(b) $\theta = \sin^{-1}(0.2)$ _____

(c) $\alpha = \tan^{-1}(-5)$ _____

MATH 7B Test 1 - SAMPLE
PART TWO - CALCULATORS ALLOWED (no graphing)
Show your work on this paper. EXACT answers are expected unless otherwise specified.
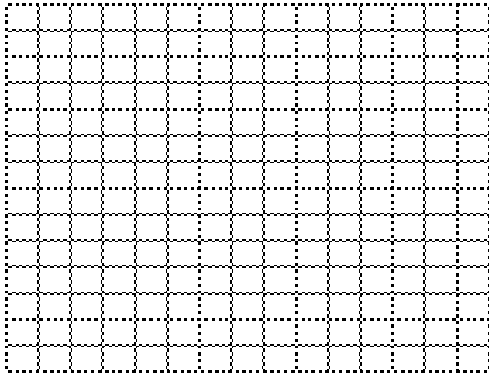Fill in the blanks.

In problems 1 - 5 fill in the blank with the most appropriate answer

(1) The range of the function $f(x) = \cos^{-1}x$ is _____

(2)   The period of $f(x) = \tan 4x$ is _____

(3)   The domain of $f(x) = \cos x$ is _____

(4)   The domain of the function $f(x) = \sin^{-1}x$ is _____.

(5) $\sin^{-1}(\sin(3\pi/4)) = $ _____

(6) Graph the following function. Show work.

$$f(x) = \sec\left(\tfrac{\pi}{4}x\right)$$ (two periods, label highs and lows, show scale)

.

(7) Solve the following equations exactly. (all solutions)

(a) $\cos\theta = \dfrac{-\sqrt{3}}{2}$ (b) $\sin\theta = \dfrac{\sqrt{2}}{2}$ (c) $\tan\theta = 0$

(8) Solve the following equations exactly. $0 \le \theta \le 2\pi$

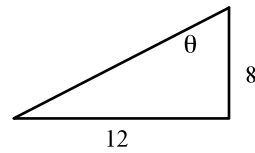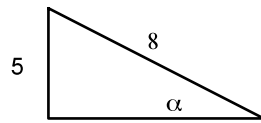(a) $\cos\theta = \dfrac{1}{3}$ (b) $\sin\theta = -1$ (c) $\tan\theta = -5$

(9) Evaluate each of the following exactly:

(a) $\cos(\tan^{-1}(-1/5)) = $ _____   (b) $\tan(\cos^{-1}(-3/4)) = $ _____

(10)   Given the figures below, solve for the variable exactly. Then use your calculator to get an approximation
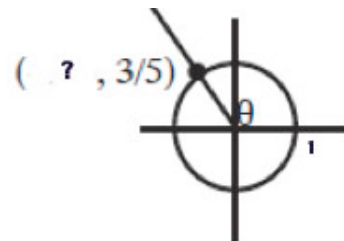

(a) α =_____ ≈ _____   (b) θ = _____ ≈ _____

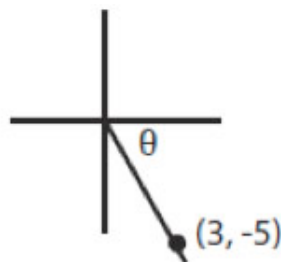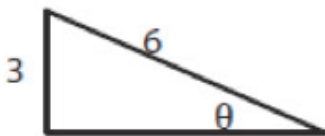(11) How would you restrict the domain of f(x) = cos2πx in order to make it a one-to-one function? Show how you arrived at that restriction.

c

(12) Using your calculator, find approximations for the following ,in radians, correct to 3 decimal places.

(a) $\tan^{-1}$ (5/3) =_____   (b) $\cos^{-1}$(- 0.25) =_____   (d) $\sin^{-1}\left(\dfrac{\sqrt{2}}{3}\right)$ = _____

(13) Given the following figures, find:

(.? , 3/5)

(3, -5)

(a) tan θ =_____   (b) cos θ =_____   (c) cos θ =_____

θ ≈ _____   θ ≈ _____   θ ≈ _____

(14) To measure the height of a building, two sightings are taken a distance of 50 feet apart. If the first angle of elevation is 40° and the second is 32°, what is the height of the building (exact and approximate).

(15) A man observes that the angle of elevation of a mountain peak from his house is 26°. Leaving the house he walks 2000 ft. up a slope of 10 ° directly towards the mountain and then finds that the angle of elevation of the peak to be 31°. What is the height of the mountain peak (relative to the house). Exact and approximate.

(10 points)
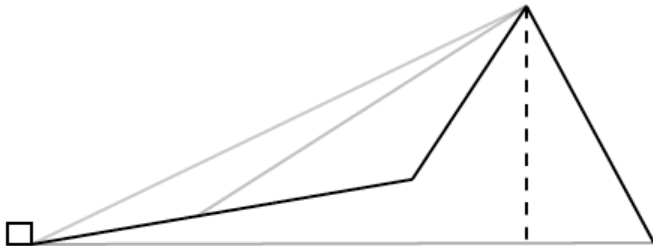
(16) Find all remaining parts of the following triangle(s)   a=12, b=31, A=20.5°

(20) Sketch the graph of f(x) = $\tan\left(\frac{\pi}{4}x\right)$ (TWO periods – show scale clearly)