Calculus II for the Life, Social and Managerial Sciences

Math 128 — Fall 2007

In-term exam October 24

Name: **Student-ID:**

This exam contains sixteen problems. Problems 1 – 14 are multiple choice problems, which each count 5% towards your total score. Problem 15 and 16 will be hand-graded (with a possibility of partial credit) and count 15% each towards your total score.

Problem 1

Solve the equation $\cos t = \sin t$ for $0 \leq t \leq \frac{3\pi}{2}$.

$\tan(t) = 1$,

$t = \pi/4 , \frac{5\pi}{4}$

A) $t = \frac{\pi}{4}$

B) $t = \frac{3\pi}{4}$

C) $t = \frac{5\pi}{4}$

D) $t = \frac{7\pi}{4}$

E) $t = \frac{\pi}{4}$ or $t = \frac{5\pi}{4}$

F) $t = \frac{3\pi}{4}$ or $t = \frac{7\pi}{4}$

G) $t = \frac{\pi}{4}$ or $t = \frac{3\pi}{4}$

H) $t = \frac{3\pi}{4}$ or $t = \frac{5\pi}{4}$

Problem 2

Compute

$$\int_0^{\pi/17} 5\sin(17x-\pi)\,dx$$

A) $-\frac{10}{17}$

B) $-\frac{5}{17}$

C) $\frac{5}{17}$

D) $\frac{10}{17}$

E) $-\frac{10}{\pi}$

F) $-\frac{5}{\pi}$

G) $\frac{5}{\pi}$

H) $\frac{10}{\pi}$

$u = 17x - \pi$

$du = 17\,dx$

$\frac{5}{17}\int_{-\pi}^{0} \sin(u)\,du$

$= -\frac{5}{17}\cos(u)\Big|_{-\pi}^{0}$

$= -\frac{5}{17}\left[1 - -1\right].$

$= \frac{-10}{17}.$

Problem 3

Let $f(x) = \tan(\sqrt{x-1})$. Calculate $f'(x)$.

A) $\frac{1}{\cos^2(\sqrt{x-1})}$

B) $\frac{2\sqrt{x-1}}{\cos^2(\sqrt{x-1})}$

C) $\tan(\frac{1}{2\sqrt{x-1}})$

D) $\frac{1}{2\sqrt{x-1}\tan^2(\sqrt{x-1})}$

E) $\frac{1}{\sqrt{x-1}\cos^2(\sqrt{x-1})}$

F) $\frac{\sqrt{x-1}}{\cos^2(\sqrt{x-1})}$

G) $\frac{\sqrt{x-1}}{\tan^2(\sqrt{x-1})}$

(H) $\frac{1}{2\sqrt{x-1}\cos^2(\sqrt{x-1})}$

$f'(x) = \frac{1}{2}\frac{\sec^2(\sqrt{x-1})}{\sqrt{x-1}}$

$= \frac{1}{(2\sqrt{x-1})\cos^2(\sqrt{x-1})}$