Math 76 Lecture problem solving 5.3-5.4
Burger

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the derivative.

1) $\frac{d}{dx}\int_0^{x^6} \sin t\, dt$ 1) _____

A) $\frac{1}{7}x^7 \sin(x^6)$ B) $6x^5 \sin(x^6)$ C) $-\cos(x^6) - 1$ D) $\sin(x^6)$

2) $\frac{d}{dx}\int_0^{x^{10}} \cos\sqrt{t}\, dt$ 2) _____

A) $\cos(x^5) - 1$ B) $10x^9 \cos(x^5)$ C) $\sin(x^5)$ D) $\cos(x^5)$

3) $\frac{d}{dx}\int_{x^8}^{0} \cos\sqrt{t}\, dt$ 3) _____

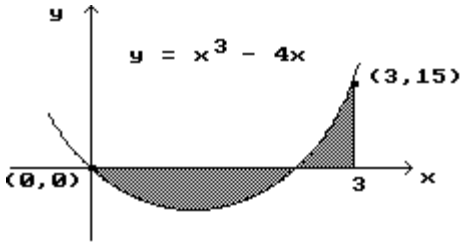
A) $-\sin(x^4)$ B) $1 - \cos(x^4)$ C) $8x^7 \cos(x^4)$ D) $-8x^7 \cos(x^4)$

4) $\frac{d}{dx}\int_0^{\tan x} \sqrt{t}\, dt$ 4) _____

A) $\sqrt{\tan x}$ B) $\frac{2}{3}\tan^{3/2} x$ C) $\sec x \tan^{3/2} x$ D) $\sec^2 x \sqrt{\tan x}$

Find the area of the shaded region.

5) 5) _____



A) $\frac{33}{4}$ B) $\frac{17}{4}$ C) $\frac{9}{4}$ D) $\frac{41}{4}$

Find the average value of the function over the given interval.

6) f(x) = 6x on [1, 3] 6) _____

A) 24 B) 12 C) 48 D) 6

7) f(x) = 2x + 14 on [−7, 7] 7) _____

A) 28 B) 7 C) 14 D) 196

Find the point(s) at which the given function equals its average value on the given interval.

8) $f(x) = \sqrt{x + 1}$; [0, 15] 8) _____

A) $\frac{57}{5}$ B) $\frac{170}{27}$ C) $\frac{171}{25}$ D) 7

9) $f(x) = |x|$; [0, 8] 9) _____

A) 3 B) 4 C) 5 D) $\frac{9}{2}$

10) $f(x) = 2 - x^2$; [-4, 5] 10) _____

A) ± 3 B) $\pm\sqrt{7}$ C) $\pm\sqrt{6}$ D) $\sqrt{5}$