PRINTABLE VERSION

Quiz 23

Question 1

Given that $\int_0^1 f(x)\,\mathrm{d}x = 4, \int_0^3 f(x)\,\mathrm{d}x = 2$, and $\int_3^4 f(x)\,\mathrm{d}x = 3$ find $\int_0^4 f(x)\,\mathrm{d}x$.

a) -1

b) 2

c) 5

d) 3

e) 9

Question 2

Given that $x > -1$ and $F(x) = \int_3^x t\sqrt{t+1}\,dx$ find $F(3)$.

a) 6

b) 2

c) 0

d) 3

e) $\frac{11}{4}$

Question 3

Given that $x > -1$ and $F(x) = \int_5^x t\sqrt{t+1}\,dx$, find $F'(x)$.

a) $x+1$

b) $x\sqrt{x+1}$

c) $\sqrt{x+1} + 1/2\,\frac{x}{\sqrt{x+1}}$

d) $\sqrt{x+1}$

e) x

Question 4

Given that $x > -7$ and $F(x) = \int_2^x t\sqrt{t+7}\,dx$, find $F'(4)$.

a) $\frac{13\sqrt{11}}{11}$

b) $\sqrt{11}$

c) $4\sqrt{11}$

d) 11

e) 4

Question 5

Given that $F(x) = \int_0^x \frac{1}{t^2 + 25}\, dx$, find $F'(-5)$.

a) $\frac{1}{25}$

b) -1

c) $\frac{1}{50}$

d) 0

e) $\frac{1}{250}$

Question 6

Given that $F(x) = \int_0^x \frac{1}{t^2+4}\, dx$, find $F''(x)$.

a) $\frac{6x^2 - 8}{(x^2+4)^3}$

b) $\frac{1}{4}$

c) $\frac{1}{x^2+4}$

d) $\frac{-2x}{(x^2+4)^2}$

e) 0

Question 7

Given that $F(x) = \int_x^0 \sqrt{t^2+9}\, dx$, find $F'(5)$.

a) $\sqrt{34}$

b) $-\sqrt{34}$

c) 0

d) 3

e) $\frac{5\sqrt{34}}{34}$

Question 8

Find the derivative of $F(x) = \int_0^{x^2} t\sin(t)\,dx$.

a) $\sin\left(x^2\right) + x^2\cos\left(x^2\right)$

b) $x^2\sin\left(x^2\right)$

c) $2\,x^2\sin(x)$

d) $2\,x^3\sin\left(x^2\right)$

e) $x\sin(x)$

Question 9

Find the derivative of $F(x) = \int_0^{x\cos(x)} \sqrt{49 - t^2}\,dx$.

a) $(\cos(x) - x\sin(x))\sqrt{49 - x^2}$

b) $(\cos(x) - x\sin(x))\sqrt{49 - x^2(\cos(x))^2}$

c) $\sqrt{49 - x^2(\cos(x))^2}$

d) $\sqrt{49 - x^2}$

e) $-\dfrac{x\cos(x)}{\sqrt{49 - x^2(\cos(x))^2}}$

Question 10

Find a formula for $f(x)$ given that f is continuous and $-x^4 + x^2 - 3\,x = \int_0^x f(t)\,dt.$

a) $f(x) = -4\,x^3 + 2\,x - 3$

b) $f(x) = -1/5\,x^5 + 1/3\,x^3 - 3/2\,x^2$

c) $f(x) = -x^4 + x^2 - 3\,x$

d) $f(x) = -x^4 + x^2 - 2\,x$

e) $f(x) = -1/5\,x^5 + 1/3\,x^3 - 3/2\,x^2 - 3$