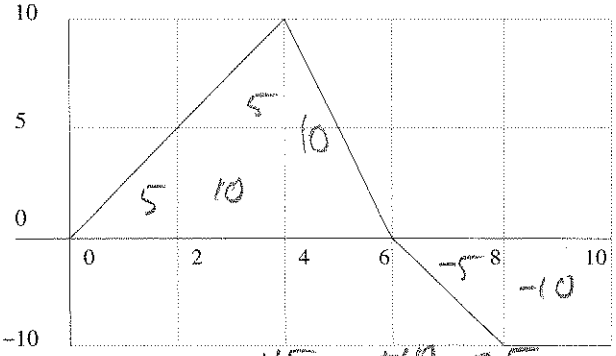
Mathematics 122

Quiz # 22 Name: Key

You must show your work to get full credit.

1. The following is the graph of $y = f'(x)$ (the graph of the derivative).



each box = 10

If $f(0) = 5$ complete the following table. +5 +15 +10 −5 −10

x	0	2	4	6	8	10
$f(x)$	5	10	25	35	30	20

2. Compute the following without using your calculator (show work). Here c is a constant.

$2x^3\big|_0^2 = 2\cdot 2^3 - 2\cdot 0^3 = 16$

$\frac{12x^{3/2}}{3/2}\big|_4^9 = 8\cdot 9^{3/2} - 8\cdot 4^{3/2}$

$\frac{e^{-2x}}{-2}\big|_1^3$

$\int_0^c (cx - x^2)\,dx = \frac{cx^2}{2} - \frac{x^3}{3}\big|_0^c$

$\int_0^2 6t^2\,dt =$ 16

$\int_4^9 12\sqrt{x}\,dx =$ 152

$\int_1^3 e^x\,dx =$ $e^3 - e$

$\int_1^3 e^{-2x}\,dx =$ $\frac{e^{-6} - e^{-2}}{-2} = \frac{e^{-2} - e^{-6}}{2}$

$\int_1^3 \frac{dt}{t} =$ $\ln 3$

$\int_0^c x(c-x)\,dx =$ $\frac{c^3}{6}$

3. Find the following antiderivatives.

$\int (2x^3 + 5x^2 + 3x - 2)\,dx =$ $\frac{1}{2}x^4 + \frac{5}{3}x^3 + \frac{3}{2}x^2 - 2x + C$

$\int e^y\,dy =$ $e^y + C$

$\int \frac{12}{x^3}\,dx =$ $-6x^{-2} + C$

$\int \frac{1}{x}\,dx =$ $\ln|x| + C$

$\int \frac{1}{\sqrt{t}}\,dt =$ $2t^{\frac{1}{2}} + C$