Actividades.

Emilio Prado

Tecnológico de Monterrey Preparatoria

Activity 1.1: Getting started on differentials

OK

Name Carlos Humberto Bárcenas González ID A01570141 Date 9/Enero/2018

Remember the following

Equation of a line in point-slope form: $y - y_1 = m(x - x_1)$ $m = f'(x)$

Equation of the tangent line: $f(x) = f'(a)[x - x_1] + f(a)$

Solve the following

1. Given the equation $f(x) = x^2 - 2x + 3$ find:

   a) $f(0) =$ $0^2 - 2(0) + 3 = 3$ $f(x) = -2(x - 0) + 3$

   b) $f'(x) =$ $2x - 2$

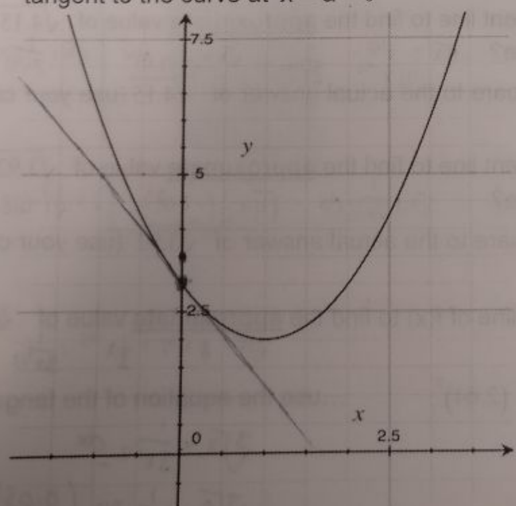
   c) $f'(0) =$ $2(0) - 2 = -2$

   d) Give the equation of the line tangent to the curve at $x = a = 0$ $f(x) = -2x + 3$

   e) The following graph belongs to $f(x) = x^2 - 2x + 3$, graph the equation of the line tangent to the curve at $x = a = 0$

   $-2x + 3$

   $-2(-1) + 3$



   f) Use the given equation $f(x) = x^2 - 2x + 3$ to find the value of $f(0.5) =$

   $0.5^2 - 2(.5) + 3 = \boxed{1.25}$

By: *Arq. Monica M. Paniagua*

Actividades.

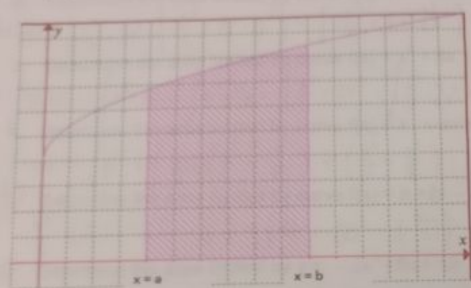
9/12

Tecnológico de Monterrey Preparatoria

Activity 4.1: Area between a graph and the $x-axis$

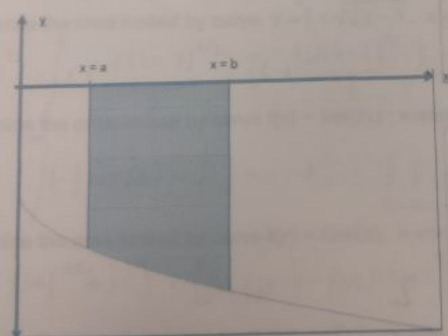
Name Carlos Humberto Bárcenas González ID A01570192 Date 6/Marzo/18

If $f(x)$ is a <u>continuous</u> function in closed interval $[a,b]$ and $f(x)\geq 0$, the area limited by $y=f(x)$, $x-axis$ and the lines $x=a$ and $x=b$ is:



$$A=\int_a^b f(x)dx=F(x)\Big|_a^b=F(b)-F(a)$$

If $f(x)$ is a <u>continuous</u> function in closed interval $[a,b]$ and $f(x)\leq 0$, the area limited by $y=f(x)$, $x-axis$ and the lines $x=a$ and $x=b$ is:



$$A=-\int_a^b f(x)dx=\int_b^a f(x)dx$$
$$=F(x)\Big|_b^a=F(a)-F(b)$$

By: *Ing. Sergio Valerio, Arq. Mónica M. Paniagua & Teachers that Designed the Course*

Actividades.

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INSTITUTO TECNOLOGICO Y DE ESTUDIOS SUPERIORES DE MONTERREY

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CAMPUS CUMBRES

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FECHA 19/08/18 EXAMEN DE .... PROFESOR ....

1: $\int 16x^4 \ln 2x^3$

$u = \ln 2x^3$ $\quad dv = 16x^4$

$du = \frac{6x^2}{2x^3} = \frac{3}{x}$ $\quad v = \frac{16x^5}{5}$

$\ln|2x^3|\left(\frac{16x^5}{5}\right) - \int\left(\frac{16x^5}{5}\right)\left(\frac{3}{x}\right)$ $\quad \frac{48x^4}{5}$ $\quad \frac{48x^5}{25}$

$\boxed{\ln|2x^3|\left(\frac{16x^5}{5}\right) - \frac{48x^5}{25} + C}$ ✓

2|4

2: $\int (x^2+6x-10)e^x$

+	$x^2+6x-10$	e^x
−	$2x+6$	e^x
+	2	e^x
−	0	e^x

$\boxed{(x^2+6x-10)(e^x) - (2x+6)(e^x) + 2e^x + C}$ ✓

3: $\int \cos(8x)\left[\tan(8x) - x^2\right]dx =$

$\sin 8x - x^2\cos 8x$

$-\frac{1}{8}\cos 8x - \left[\frac{x^2}{8}\sin 8x + \frac{x}{32}\cos 8x - \frac{1}{256}\sin 8x\right] + C$

+	x^2	$\cos 8x$
−	$2x$	$\frac{1}{8}\sin 8x$
+	2	$-\frac{1}{64}\cos 8x$
−	0	$-\frac{1}{512}\sin 8x$

X

4. $\int x^2\sqrt{x-1}\,dx$ $\quad uv - \int v\,du$

+	x^3 ?	$(x-1)^{1/2}$	
−	$3x^2$	$\frac{2}{3}(x-1)^{3/2}$	
+	$6x$	$\frac{4}{15}(x-1)^{5/2}$	
−	6		$\frac{8}{105}(x-1)^{7/2}$
+	$\emptyset$		$\frac{16}{945}(x-1)^{9/2}$

$\int (x-1)^{1/2}$

$\frac{2}{3}(x-1)^{3/2}$

$$\frac{2}{3}x^3(x-1)^{3/2} - 3x^2\,\frac{4}{15}(x-1)^{5/2} + 6x\,\frac{8}{105}(x-1)^{9/2} - 6\cdot\frac{16}{945}(x-1)^{9/2} + C$$