MATH 141 HW 16 (6589721)

Due: Thu Nov 20 2014 11:59 PM EST

Question   1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35

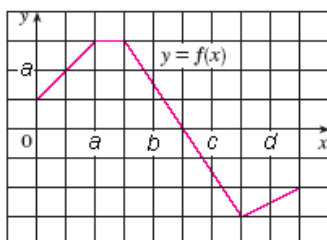**1.**   Question Details   SCalcET6 5.2.033. [698729]

The graph of f is shown. Evaluate each integral by interpreting it in terms of areas.

$a = 16$
$b = 32$
$c = 48$
$d = 64$

(a) $\displaystyle\int_0^{16} f(x)\,dx =$ [＿＿＿] 🔑 256

(b) $\displaystyle\int_0^{40} f(x)\,dx =$ [＿＿＿] 🔑 640

(c) $\displaystyle\int_{40}^{56} f(x)\,dx =$ [＿＿＿] 🔑 -192

(d) $\displaystyle\int_0^{72} f(x)\,dx =$ [＿＿＿] 🔑 128

2.   Question Details   SCalcET6 5.2.034.MI. [1816769]

The graph of *g* consists of two straight lines and a semicircle. Use it to evaluate each integral.

$y = g(x)$
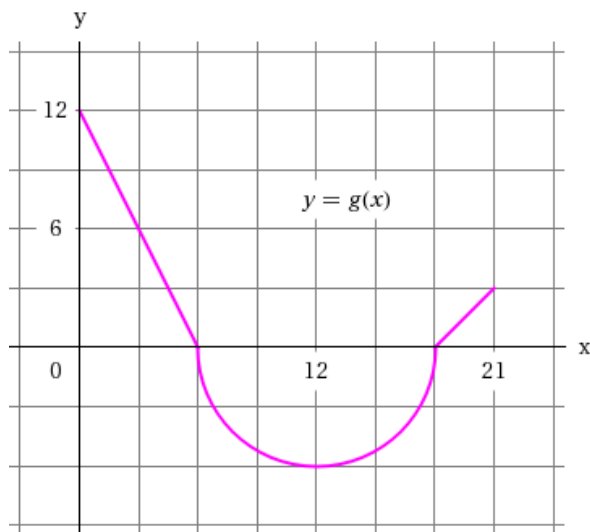
(a) $\int_0^6 g(x)\, dx$

36

(b) $\int_6^{18} g(x)\, dx$

-18π

(c) $\int_0^{21} g(x)\, dx$

$40.5 - 18\pi$

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3.   Question Details   SCalcET6 5.2.035.MI. [1386386]

Evaluate the integral by interpreting it in terms of areas.

$$\int_0^3 \left(\frac{7}{2}x - 7\right) dx$$

$-\dfrac{21}{4}$

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4.   Question Details   SCalcET6 5.2.038.MI. [1816965]

Evaluate the integral by interpreting it in terms of areas.

$$\int_{-3}^3 (4 - 2x)\, dx$$

24

5.   Question Details   SCalcET6 5.3.047. [1817356]

Use a graph to give a rough estimate of the area of the region that lies beneath the given curve. Then find the exact area.

$y = \sqrt[5]{x}, \quad 0 \le x \le 32$

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6.   Question Details   SCalcET6 5.3.048. [1817214]

Use a graph to give a rough estimate of the area of the region that lies beneath the given curve. Then find the exact area.

$y = x^{-3}, \quad 2 \le x \le 5$

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7.   Question Details   SCalcET6 5.3.049. [1290674]

Find the area of the region that lies beneath the given curve.

$y = \sin(x), 0 \le x \le \pi$

2

8.   Question Details   SCalcET6 5.3.053. [1291220]

Find the derivative of the function.

$$g(x) = \int_{2x}^{7x} \frac{u^2 - 3}{u^2 + 3} du$$

$$-2 \cdot \frac{4x^2 - 3}{4x^2 + 3} + 7 \cdot \frac{49x^2 - 3}{49x^2 + 3}$$

9.   Question Details   SCalcET6 5.3.054. [1290381]
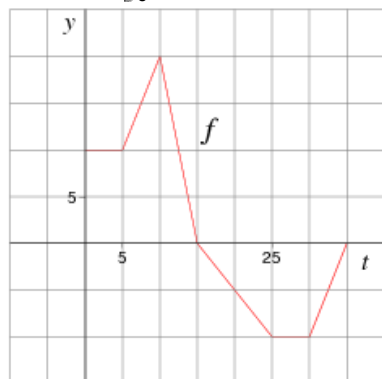
Find the derivative of the function.

$$g(x) = \int_{\tan(x)}^{4x^2} \frac{1}{\sqrt{5 + t^3}} dt$$

$$-\frac{(\sec(x))^2}{\sqrt{5 + (\tan(x))^3}} + \frac{8x}{\sqrt{5 + 64x^6}}$$

10.   Question Details   SCalcET6 5.3.003. [872785]

Let $g(x) = \displaystyle\int_0^x f(t)\,dt$, where f is the function whose graph is shown.

(a) Evaluate $g(0)$, $g(5)$, $g(10)$, $g(15)$ and $g(30)$.

$g(0) =$ [   ] 🔑 0

$g(5) =$ [   ] 🔑 50

$g(10) =$ [   ] 🔑 125

$g(15) =$ [   ] 🔑 175

$g(30) =$ [   ] 🔑 75

(b) On what interval is g increasing?

([   ] 🔑 0 , [   ] 🔑 15)

(c) Where does g have a maximum value?

$x =$ [   ] 🔑 15

(d) Sketch a rough graph of g. (Do this on paper. Your instructor may ask you to turn in this work.)

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11.   Question Details   SCalcET6 5.3.007.MI. [1387698]

Use Part 1 of the Fundamental Theorem of Calculus to find the derivative of the function.

$$g(x) = \int_1^x \frac{3}{t^3+1}\,dt$$

$g'(x) =$ [   ] $\dfrac{3}{x^3+1}$

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12.   Question Details   SCalcET6 5.3.008. [1816419]

Use Part 1 of the Fundamental Theorem of Calculus to find the derivative of the function.

$$g(x) = \int_2^x e^{4t^2 - 5t}\,dt$$

$g'(x) =$ [   ] $e^{4x^2 - 5x}$

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13.   Question Details   SCalcET6 5.3.009. [1817010]

Use Part 1 of the Fundamental Theorem of Calculus to find the derivative of the function.

$$g(y) = \int_3^y t^2 \sin 2t \, dt$$

g '(y) = [   ] $y^2 \sin (2y)$

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14.   Question Details   SCalcET6 5.3.010. [1817149]

Use Part 1 of the Fundamental Theorem of Calculus to find the derivative of the function.

$$g(r) = \int_2^r \sqrt{x^2 + 2} \, dx$$

g'(r) = [   ] $\sqrt{r^2 + 2}$

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15.   Question Details   SCalcET6 5.3.012.MI. [1386615]

Use Part 1 of the Fundamental Theorem of Calculus to find the derivative of the function.

$$G(x) = \int_x^2 \cos \sqrt{t} \, dt$$

G'(x) = [   ] $-\cos\left(\sqrt{x}\right)$

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16.   Question Details   SCalcET6 5.3.013.MI. [1387359]

Use Part 1 of the Fundamental Theorem of Calculus to find the derivative of the function.

$$h(x) = \int_2^{1/x} \arctan 5t \, dt$$

h'(x) = [   ] $-\dfrac{\arctan\left(\frac{5}{x}\right)}{x^2}$

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17.   Question Details   SCalcET6 5.3.014. [1290601]

Use Part 1 of the Fundamental Theorem of Calculus to find the derivative of the function.

$$h(x) = \int_2^{x^2} \sqrt{6 + r^3} \, dr$$

h'(x) = [   ] $2x\sqrt{6 + x^6}$

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18.   Question Details   SCalcET6 5.3.015. [1816284]   -

Use Part 1 of the Fundamental Theorem of Calculus to find the derivative of the function.

$$y = \int_{5}^{\tan x} \sqrt{6t + \sqrt{t}}\ dt$$

$y' =$ ⬚ $\boxed{\sqrt{6\tan(x) + \sqrt{\tan(x)}}\ \sec^2(x)}$

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19.   Question Details   SCalcET6 5.3.016. [1291391]   -

Use Part 1 of the Fundamental Theorem of Calculus to find the derivative of the function.

$$y = \int_{1}^{\cos(x)} \left(5 + v^5\right)^6 dv$$

$y' =$ ⬚ $\boxed{-\left(5 + (\cos(x))^5\right)^6 \sin(x)}$

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20.   Question Details   SCalcET6 5.3.017. [1816635]   -

Use Part 1 of the Fundamental Theorem of Calculus to find the derivative of the function.

$$y = \int_{2\ -\ 3x}^{3} \frac{u^3}{1 + u^2}\ du$$

$y' =$ ⬚ $\boxed{\dfrac{3\left(2 - 3x\right)^3}{1 + \left(2 - 3x\right)^2}}$

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21.   Question Details   SCalcET6 5.3.018. [1817418]   -

Use Part 1 of the Fundamental Theorem of Calculus to find the derivative of the function.

$$y = \int_{e^x}^{0} 2\ \sin^2 t\ dt$$

$y' =$ ⬚ $\boxed{-2e^x \sin^2(e^x)}$

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22.   Question Details   SCalcET6 5.3.019. [1817104]   -

Evaluate the integral.

$$\int_{-2}^{3} (x^3 - 6x)dx$$

⬚   🔍 5/4

23.   Question Details   SCalcET6 5.3.020. [698756]   _

Evaluate the integral.

$$\int_{-3}^{6} 7\,dx$$

[   ]   🔑 63

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24.   Question Details   SCalcET6 5.3.021. [1816170]   _

Evaluate the integral.

$$\int_{2}^{6} (3 - 2t + 3t^2)\,dt$$

[   ]   🔑 188

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25.   Question Details   SCalcET6 5.3.022.MI. [1816672]   _

Evaluate the integral.

$$\int_{0}^{1} \left(3 + \frac{3}{4}u^4 - \frac{4}{5}u^9\right)\,du$$

[   ]   🔑 307/100

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26.   Question Details   SCalcET6 5.3.023.MI. [1387391]   _

Evaluate the integral.

$$\int_{0}^{1} x^{2/5}\,dx$$

[   ]   🔑 5/7

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27.   Question Details   SCalcET6 5.3.024. [656986]   _

Evaluate the integral.

$$\int_{1}^{32} \sqrt[5]{x}\,dx$$

[   ]   🔑 105/2

28.   Question Details   SCalcET6 5.3.025. [698640]

Evaluate the integral.

$$\int_1^4 \frac{5}{t^4}\,dt$$

[ ]   🔑 105/64

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29.   Question Details   SCalcET6 5.3.026. [1816879]

Evaluate the integral.

$$\int_{5\pi}^{6\pi} \cos\theta\,d\theta$$

[0]

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30.   Question Details   SCalcET6 5.3.027. [872789]

Evaluate the integral.

$$\int_0^1 x\left(1+x^5\right)dx$$

[ ]   🔑 9/14

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31.   Question Details   SCalcET6 5.3.028. [698708]

Evaluate the integral.

$$\int_0^1 \left(4+6x\sqrt{x}\right)dx$$

[ ]   🔑 32/5

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32.   Question Details   SCalcET6 5.3.029.MI. [1816347]

Evaluate the integral.

$$\int_1^4 \frac{x-5}{\sqrt{x}}\,dx$$

[ ]   🔑 -16/3

33.   Question Details   SCalcET6 5.3.030. [1816731]   -

Evaluate the integral.

$$\int_0^4 (y - 3)(2y + 1)\, dy$$

[   ] 🔑 -28/3

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34.   Question Details   SCalcET6 5.3.033.MI. [1816434]   -

Evaluate the integral.

$$\int_2^3 (2 + 2y)^2\, dy$$

[   ] 🔑 148/3

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35.   Question Details   SCalcET6 5.3.035. [1816281]   -

Evaluate the integral.

$$\int_1^9 \frac{1}{2x}\, dx$$

$$\frac{\ln(9)}{2}$$

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36.   Question Details   SCalcET6 5.3.036. [1816133]   -

Evaluate the integral.

$$\int_0^3 3^x\, dx$$

$$\frac{26}{\ln(3)}$$

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37.   Question Details   SCalcET6 5.3.040. [2792791]   -

Evaluate the integral.

$$\int_3^4 \frac{2 + u^2}{u^3}\, du$$

$$\frac{7}{144} + \ln\left(\frac{4}{3}\right)$$

38.   Question Details   SCalcET6 5.3.055. [1291181]

Find the derivative of the function.

$$g(x) = \int_{\sqrt{x}}^{x^2} \sqrt{t}\sin(t)\,dt$$

$$-\frac{\sin\left(\sqrt{x}\right)}{2\sqrt[4]{x}} + 2x^2\sin\left(x^2\right)$$

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39.   Question Details   SCalcET6 5.3.056. [1290003]

Find the derivative of the function.

$$y = \int_{4\cos(x)}^{2x} \cos\left(u^4\right)\,du$$

$$4\sin(x)\cos\left(256\left(\cos(x)\right)^4\right) + 2\cos\left(16x^4\right)$$

Assignment Details

Name (AID): **MATH 141 HW 16 (6589721)**
Submissions Allowed: **100**
Category: **Homework**
Code:
Locked: **Yes**
Author: **Blanco-Silva, Francisco (** blanco@math.sc.edu **)**
Last Saved: **Nov 19, 2014 08:23 AM EST**
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