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Spring 2013

13. Find the average value of

$f(x) = xe^{x^2}$

over the interval $[0,2]$.

Recall that the average value of $f(x)$ on the interval $[a,b]$ is found by

$$\frac{1}{b-a}\int_a^b f(x)\,dx$$

(a) 0

(b) $e^2 - 1$

(c) $e^4 - 1$

(d) $\frac{1}{2}(e^4 - 1)$

(e) $\frac{1}{4}(e^4 - 1)$

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Spring 2013

14. Let

$$G(x) = \int_{\sqrt{x}}^{2} \frac{\pi \sin\left(t^2\right)}{t}\, dt$$

Find the derivative of G evaluated at $\frac{\pi}{6}$.

(a) 1

(b) $\frac{1}{2}$

(c) $\frac{-3\sqrt{3}}{2}$

(d) $\frac{-3}{2}$

(e) 0

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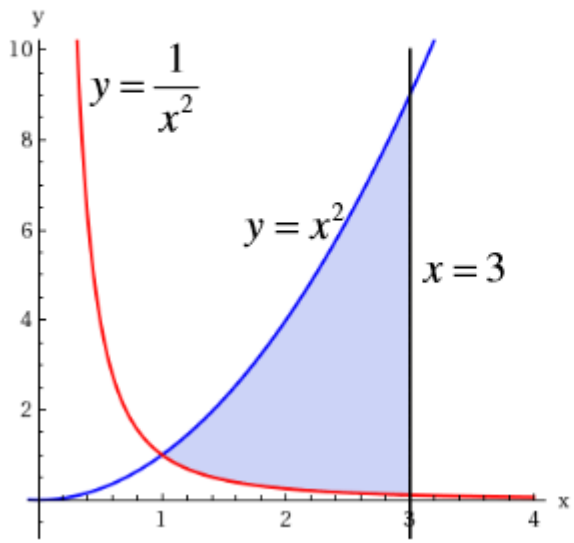
Spring 2013

16. Find the area of the region in the first quadrant bounded by the graphs of $y = x^2$, $y = \frac{1}{x^2}$, and $x = 3$. See the shaded region below.



(a) 4

(b) 8

(c) 12

(d) 16

(e) 24

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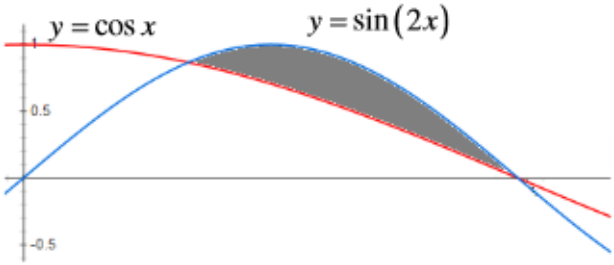
Fall 2012

12. Find the area of the shaded region.

Hint: $\sin 2x = 2\sin x \cos x$



A) $\frac{1}{6}$ B) $\frac{1}{5}$ C) $\frac{1}{4}$ D) $\frac{1}{3}$ E) $\frac{1}{2}$ F) $\frac{3}{5}$ G) $\frac{3}{4}$ H) 1

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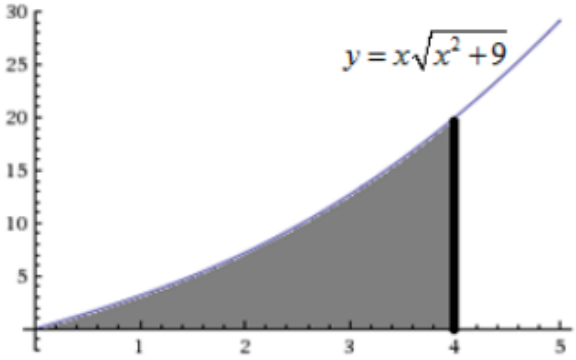
15. Find the area of the shaded region.



A) $\frac{62}{3}$ B) $\frac{68}{3}$ C) $\frac{71}{3}$ D) $\frac{74}{3}$

E) $\frac{82}{3}$ F) $\frac{86}{3}$ G) $\frac{95}{3}$ H) $\frac{98}{3}$

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14. Find the area of the region enclosed by the parabola $y = 3x^2 + 4x + 1$ and the line $y = 2x + 2$.

A) $\frac{5}{27}$ B) $\frac{32}{27}$ C) $\frac{59}{27}$ D) $\frac{86}{27}$

E) $\frac{1}{9}$ F) $\frac{10}{9}$ G) $\frac{19}{9}$ H) $\frac{28}{9}$

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Answers:

Spring 2013 # 13 : E

Spring 2013 # 14 : D

Spring 2013 # 16 : B

Fall 2012 # 12 : C

Fall 2012 # 15 : H

Fall 2011 # 14 : B