

# Quiz 11

ⓘ This is a preview of the published version of the quiz

Started: Dec 11 at 10:42am

## Quiz Instructions

Choose the best solution choice for each multiple-choice problem. For problems that require an exact numerical answer, the answer will always be an integer. Each problem is worth two (2) points.

### Question 1

2 pts

Suppose  $a$  is an unspecified real number. Evaluate the definite integral

$\int_a^\pi (2x + \cos x) dx$ . Your final answer should be in terms of  $a$ .

$x^2 - \sin x + C$

$a^2 - \sin a$

$a^2 + \sin a - \pi^2$

$\pi^2 - a^2 - \sin a$

$$\begin{aligned} \int_a^\pi (2x + \cos x) dx &= x^2 + \sin x \Big|_a^\pi \\ &= (\pi^2 + \sin \pi) \\ &\quad - (a^2 + \sin a) \\ &= \pi^2 - a^2 - \sin a \end{aligned}$$

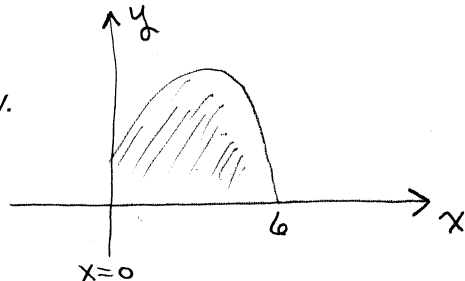
### Question 2

2 pts

Use a definite integral to determine the area of the **1st quadrant region** under the graph of  $y = 6 + 5x - x^2$ .

Write your exact numerical answer in the box below.

54



$$6 + 5x - x^2 = (6-x)(1+x)$$

$$\begin{aligned} \int_0^6 (6 + 5x - x^2) dx &= 6x + \frac{5}{2}x^2 - \frac{1}{3}x^3 \Big|_0^6 \\ &= 54 - 0 \end{aligned}$$

**Question 3**

2 pts

Let  $F(x) = \int_5^x e^{t^2} dt$ . Find  $F'(x)$ .

$$F'(x) = e^{x^2}$$

$F'(x) = e^{5^2}$

$F'(x) = e^{x^2} - e^{5^2}$

$F'(x) = e^{x^2}$

$F'(x) = 2x e^{x^2}$

**Question 4**

2 pts

Suppose you use a  $u$ -substitution to evaluate the indefinite integral  $\int \frac{4x^2}{2x^3 + 1} dx$ .

Which one of the following would be the best choice for  $u$ ?

$u = \frac{4x^2}{2x^3 + 1}$

$u = x^3$

$u = 2x^3 + 1$

$u = 4x^2$

$$u = 2x^3 + 1$$

$$du = 6x^2 dx$$

$$\frac{4}{6} du = 4x^2 dx$$

$$\frac{4}{6} \int \frac{1}{u} du$$

**Question 5**

2 pts

Only one of the integrals below should be evaluated by using a  $u$ -substitution. Choose that integral.

$\int 8x^5 \cos(x^6) dx$

$$u = x^6$$

$\int \frac{4x^2}{x^2 - 1} dx$

$\int \frac{2}{x^2 + 1} dx$

$\int 7x^3 \cos(x) dx$

Not saved

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