Student: Cole Lamers **Date:** 10/02/19	**Instructor:** Viktoriya Shcherban **Course:** Calc 1 11:30 AM / Internet (81749&81750) Shcherban	**Assignment:** 5.3 The Definite Integral (Set 2)

1. Evaluate the integral $\int_0^{23/2} t^2 dt$.

The value of the integral $\int_0^{23/2} t^2 dt =$ $\frac{12167}{24}$.

(Type a simplified fraction.)

2. Evaluate the integral $\int_a^{6a} x\,dx$.

The value of the integral $\int_a^{6a} x\,dx =$ $\frac{35}{2}a^2$.

3. Evaluate the integral $\int_{11}^{7} 9\,dx$.

The value of the integral $\int_{11}^{7} 9\,dx =$ -36.

(Simplify your answer.)

4. Evaluate the integral $\int_5^{10} (4t-3)dt$.

The value of the integral $\int_5^{10} (4t-3)dt =$ 135.

(Simplify your answer.)

5. Use the rules for definite integration, $\int_a^b c\,dx = c(b-a)$, and $\int_a^b x\,dx = \frac{b^2}{2} - \frac{a^2}{2}$ to evaluate $\int_4^3 \left(3+\frac{z}{2}\right) dz$.

$\int_4^3 \left(3+\frac{z}{2}\right) dz =$ $-\frac{19}{4}$ (Type an integer or a simplified fraction.)

6. Evaluate the integral $\int_{12}^{13} 24u^2 du$.

The value of the integral $\int_{12}^{13} 24u^2 du =$ 3752.

(Simplify your answer.)

7. Use the rules of integrals to evaluate the following definite integral.

$$\int_0^6 \left(9x^2 + x - 7\right) dx$$

$\int_0^6 \left(9x^2 + x - 7\right) dx =$ 624

(Simplify your answer.)

8. Use a definite integral to find the area of the region between the given curve and the x-axis on the interval [0, b].

$y = 6x^2$

The area is $2b^3$.

9. Use a definite integral to find the area of the region between the curve $y = 8x$ and the x-axis on the interval [0,b].

The area of the region between the curve $y = 8x$ and the x-axis on the interval [0,b] is $\frac{8b^2}{2}$.

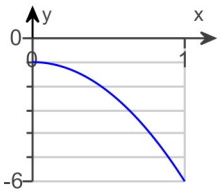
10. Find the average value of the function $f(x) = x^2 - 21$ on $\left[0, \sqrt{42}\right]$.

The average value of the function $f(x) = x^2 - 21$ on $\left[0, \sqrt{42}\right]$ is -7.
(Type a simplified fraction.)

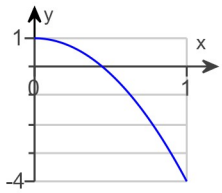
11. Graph the function $f(x) = -5x^2 - 1$ on [0, 1] and find its average value over the interval.

Choose the correct graph of the function below.

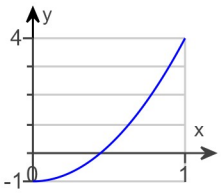
A.



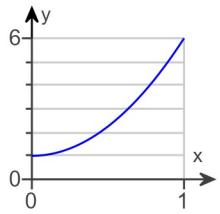
B.



C.



D.



The average value is $-\frac{8}{3}$. (Type an integer or a simplified fraction.)

12. Use the equation $\int_a^b f(x)\,dx = \lim_{n\to\infty} \sum_{k=1}^{n} f\left(a + k\frac{(b-a)}{n}\right)\left(\frac{b-a}{n}\right)$ to evaluate the following definite integral.

$$\int_a^b c\,dx$$

$\int_a^b c\,dx =$ $c(b-a)$