1. 

Use the Exponential Rule to find the indefinite integral. (Use \( C \) for the constant of integration.)

\[ 
\int e^{-0.25x} \, dx
\]

2. 

Use the Exponential Rule to find the indefinite integral. (Use \( C \) for the constant of integration.)

\[ 
\int 6xe^{0.5x^2} \, dx
\]

3. 

Use the Log Rule to find the indefinite integral. (Use \( C \) for the constant of integration. Remember to use absolute values where appropriate.)

\[ 
\int \frac{7}{7x - 8} \, dx
\]

4. 

Use the Log Rule to find the indefinite integral. (Use \( C \) for the constant of integration. Remember to use absolute values where appropriate.)

\[ 
\int \frac{x^3}{2 - x^4} \, dx
\]

5. 

Use the Log Rule to find the indefinite integral. (Use \( C \) for the constant of integration.)

\[ 
\int \frac{1}{x(\ln x)^5} \, dx
\]
6. Question Details

Use any basic integration formula or formulas to find the indefinite integral. (Use \( C \) for the constant of integration. Remember to use absolute values where appropriate.)

\[
\int \frac{x - 1}{8x} \, dx
\]

7. Question Details

Use any basic integration formula or formulas to find the indefinite integral. (Use \( C \) for the constant of integration.)

\[
\int \frac{6}{1 + e^{-6x}} \, dx
\]

8. Question Details

Find the equation of the function \( f \) whose graph passes through the given point.

\[ f'(x) = \frac{8}{1 + e^{-x}}; \quad (0, 9) \]

\[ f(x) = \]

9. Question Details

Because of an insufficient oxygen supply, the trout population in a lake is dying. The population's rate of change can be modeled by

\[
\frac{dP}{dt} = -135e^{-t/20}
\]

where \( t \) is the time in days. When \( t = 0 \), the population is 2700.

(a) Find a model for the population.

\[ P(t) = \]

(b) What is the population after 15 days? (Round your answer to the nearest integer.)

\[ \text{fish} \]

(c) How long will it take for the entire trout population to die? (Assume the entire population has died off when the population is less then one. Round your answer to one decimal place.)

\[ \text{days} \]
10. Question Details

Use the values $\int_{0}^{5} f(x) \, dx = 8$ and $\int_{0}^{5} g(x) \, dx = 2$ to evaluate the definite integral.

(a) $\int_{0}^{5} 2g(x) \, dx$

(b) $\int_{0}^{5} f(x) \, dx$

(c) $\int_{0}^{5} f(x) \, dx$

(d) $\int_{0}^{5} [f(x) - f(x)] \, dx$

11. Question Details

Find the area of the region.

$y = 1 - x^4$
12. Question Details

Find the area of the region.

\[ y = \frac{x - 3}{x} \]

Evaluate the definite integral.

\[ \int_{3}^{6} (-5x + 6) \, dx \]

Evaluate the definite integral.

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

Evaluate the definite integral.

\[ \int_{0}^{2} \frac{e^{-x}}{\sqrt{e^{-x} + 2}} \, dx \]
16. Evaluate the definite integral.
\[
\int_{-1}^{8} \left| \frac{x}{8} \right| \, dx
\]

17. Find the area of the region bounded by the graphs of the equations.
\[ y = e^x, \ y = 0, \ x = 0, \text{ and } x = 8 \]

Use a graphing utility to verify your results.
18. Question Details

Find the average value of the function on the interval.

\[ f(x) = 25 - x^2; \quad [-5, 5] \]

Find all \( x \)-values in the interval for which the function is equal to its average value. (Enter your answers as a comma-separated list. Round your answers to two decimal places.)

\[ x = \quad \]

19. Question Details

Evaluate the definite integral using the properties of even and odd functions.

\[ \int_{-9}^{9} (x^3 - 4x) \, dx \]

20. Question Details

Use the value \( \int_{0}^{4} x^3 \, dx = 64 \) to evaluate each definite integral. Explain your reasoning.

(a) \( \int_{-4}^{0} x^3 \, dx \)

\[ \int_{-4}^{0} x^3 \, dx = \quad \text{because} \quad \int_{-4}^{0} x^3 \, dx = -\int_{0}^{4} x^3 \, dx. \]

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

\[ \int_{-4}^{4} x^3 \, dx = \quad \text{because} \quad f(x) = x^3 \text{ is an} \quad \text{---Select---} \quad \text{function.} \]

(c) \( \int_{0}^{4} 4x^3 \, dx \)

\[ \int_{0}^{4} 4x^3 \, dx = \quad \text{because} \quad \int_{0}^{4} 4x^3 \, dx = \quad \int_{0}^{4} x^3 \, dx. \]