11. Find the indefinite integral. \[ \int \frac{5x^2 + 3\sqrt{x} - 2x - 1}{x} \, dx \]

12. The population of the Island of Misfit Toys is decreasing at a rate of \( \frac{dP}{dt} = -8e^{-\frac{1}{2}t} \)
where \( P \) is the population or number of toys and \( t \) is the year, where \( t = 0 \) corresponds to 2000. Find the population function, \( P \), if there were 40 toys on the island in the year 2000.

13. Complete the following (using “words” not “formulas.”)

The limit definition of the area of a region bounded by the graphs of \( y = f(x) \), \( x = a \), \( x = b \) and the \( x \)-axis is given by
\[ A = \lim_{n \to \infty} \sum_{i=1}^{n} f(x_i)\Delta x \]
where
\[ \Delta x \] is the ____________ of each rectangle, and
\[ x_i \] are the _________________ of each rectangle
\[ f(x_i) \] are the _________________ of each rectangle and
\[ f(x_i)\Delta x \] is the _________________ of each rectangle.

14. Find the indefinite integral: \[ \int \frac{x}{\sqrt{16-x^2}} \, dx \]

15. Write the definite integral to find the area of the region bounded by the graphs of \( f(x) = \cos x \) and the \( x \)-axis, shown. Then evaluate your integral.
16. Find the indefinite integral. \[ \int \left( \frac{1 + \sin x}{\cos x} \right) \, dx \]

17. Find the indefinite integral. \[ \int \frac{1}{\sqrt{5 - x^2}} \, dx \]

18. Find the indefinite integral. \[ \int \frac{x^3 + 4x - 1}{x^2 + 4} \, dx \]

19. Find the indefinite integral. \[ \int \frac{4x}{x^2 + 9} \, dx \]

20. Find the indefinite integral. \[ \int \frac{1}{\sqrt{9 - 8x - x^2}} \, dx \]

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FINAL EXAM SCORES (ONLY) WILL BE POSTED ON THE COURSE WEBSITE AS SOON AS POSSIBLE.

COURSE LETTER GRADES WILL NOT BE POSTED ON THE WEBSITE BUT BE AVAILABLE THROUGH ELION AS SOON AS POSSIBLE.

HAVE A GREAT BREAK!