**Chapter 3**

**Techniques of Integration**

**3.2 Trigonometric Integrals**

**Section Exercises**

**Fill in the blank to make a true statement.**

69. 

Answer: 

**Use an identity to reduce the power of the trigonometric function to a trigonometric function raised to the first power.**

71. 

Answer: 

**Evaluate each of the following integrals by *u*-substitution.**

73. 

Answer: 

75. 

Answer: 

77. 

Answer: 

**Compute the following integrals using the guidelines for integrating powers of trigonometric functions. Use a CAS to check the solutions. (Note: Some of the problems may be done using techniques of integration learned previously.)**

79. 

Answer: 

81. 

Answer: 

83. 

Answer:  

85. 

Answer: 

87. 

Answer: 

89. 

Answer: 

91. 

Answer:  

93. 

Answer: 

**For the following exercises, find a general formula for the integrals.**

95. 

Answer: 

**Use the double-angle formulas to evaluate the following integrals.**

97. 

Answer: 

99. 

Answer: 

101. 

Answer: **

**For the following exercises, evaluate the definite integrals. Express answers in exact form whenever possible.**

103. 

Answer: 0

105. 

Answer: 0

107. 

Answer: 0

109.  (Round this answer to three decimal places.)

Answer: Approximately 0.239

111. 

Answer: 

113. Find the area of the region bounded by the graphs of the equations 

Answer: 1.0

115. Find the average value of the function  over the interval 

Answer: 0

**For the following exercises, solve the differential equations.**

117 

Answer: 

119. Find the length of the curve 

Answer: 

**For the following exercises, use this information: The inner product of two functions *f* and *g* over  is defined by  Two distinct functions *f* and *g* are said to be orthogonal if **

121. Show that  are orthogonal over the interval 

Answer: 

123. Integrate 

Answer: 

**For each pair of integrals, determine which one is more difficult to evaluate. Explain your reasoning.**

125.  or 

Answer: The second integral is more difficult because the first integral is simply a *u*-substitution type.

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