**Chapter 3**

**Techniques of Integration**

**3.4 Partial Fractions**

**Section Exercises**

**Express the rational function as a sum or difference of two simpler rational expressions.**

183. 

Answer: 

185. 

Answer: 

187. 

Answer: 

189. 

Answer: 

191. 

Answer: 

193. 

Answer: 

195. 

Answer: 

**Use the method of partial fractions to evaluate each of the following integrals.**

197. 

Answer: 

199. 

Answer: 

201. 

Answer: 

203. 

Answer: 

205. 

Answer: 

**Evaluate the following integrals, which have irreducible quadratic factors.**

207. 

Answer: 

209. 

Answer: 

**Use the method of partial fractions to evaluate the following integrals.**

211. 

Answer: 

213.  (*Hint:* Use the rational root theorem.)

Answer: 

**Use substitution to convert the integrals to integrals of rational functions. Then use partial fractions to evaluate the integrals.**

215. 

Answer: 

217. 

Answer: 

219. 

Answer: 

221. 

Answer: 

223. 

Answer: 

225. 

Answer: 

227. 

Answer: 

**Use the given substitution to convert the integral to an integral of a rational function, then evaluate.**

229. 

Answer: 

231. Find the volume of the solid generated when the region bounded by    and  is revolved about the *x-*axis.

Answer:

**Solve the initial-value problem for *x* as a function of *t.***

233. 

Answer: 



235. Answer: 

237. Find the volume generated by revolving the area bounded by  about the *y*-axis.

Answer: 

239. Evaluate the integral 

Answer: 

**For the following problems, use the substitutions    and **

241. Find the area under the curve  between  and  (Assume the dimensions are in inches.)

Answer: 2.0 in.2

243. Evaluate 

Answer:    

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