

## IM2 Book 2 Selected Answers

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136.  $\frac{12,400\pi}{3} + 800\sqrt{3} \text{ ft}^2$

137. (a)  $46^\circ$

(b)  $46^\circ$

138. –

139. –

140.  $\frac{\pi}{4}$

141. (a) 1 : 8

(b) 7 : 8

142. 12.5

143. (a)  $2k$

(b)  $2k$

(c) –

144.  $\angle BCA = 20^\circ$ ,  $\angle CAB = 110^\circ$ ,  $\widehat{AC} = 100^\circ$ , major arc  $\widehat{BC} = 220^\circ$

145. –

146. –

147. –

148. –

149. –

150. (a)  $\frac{1}{2}$

(b)  $\frac{1}{8}$

(c)  $100\pi \text{ cm}^3$

(d)  $\frac{25\pi}{2} \text{ cm}^3$

151.  $\angle R = 67^\circ$ ,  $\angle P = 126^\circ$

152. –
153. –
154. –
155.  $1 : \sqrt[3]{2}$
156.  $V = \frac{485\pi}{3}, LA = 55\sqrt{2}$
157.  $104^\circ, 76^\circ$
158.  $\frac{9}{4}$
159.  $\frac{13.6}{\sin 63^\circ}$
160. –
161. –
162.  $864\pi \text{ cm}^2$
163.  $2\sqrt{2} \text{ in.}$
164.  $90^\circ$
165. –
166. (a)  $8:27$   
(b)  $2:3$   
(c) –
167.  $2\pi - 3\sqrt{3}$
168.  $16 \text{ cm}$
169. (a)  $70^\circ$   
(b)  $180 - k^\circ$
170. (a)  $\frac{12.1}{\sin 48^\circ}$   
(b)  $\frac{a}{\sin A}$
171.  $\frac{5\sqrt{3}}{3}$
172. –
173.  $144\pi \text{ cm}^2$
174.  $\frac{250\pi}{3}$
175. 21, 1
176. 30

177. –

178. Minor arc length = 11.07; major arc length = 20.34;  $A_1 = 17.68$ ;  $A_2 = 60.86$

179.  $\frac{2\pi r^3}{3}$

180. (a)  $39\pi \text{ cm}^2$

(b)  $39\pi \text{ cm}^2$

181. –

182.  $V_1 = \frac{1,280\pi}{3} - 320\sqrt{3}$ ,  $V_2 = \frac{2,560\pi}{3} + 320\sqrt{3}$

183.  $15, \sqrt{505}$

184.  $L = 16, A_1 = 48, A_2 = 120$

185. –

186. tangent line:  $y - 12 = \frac{1}{8}(x - 6)$

187.  $2\pi - 4$

188. (a)  $16h\pi - h^2\pi \text{ cm}^2$

(b)  $16h\pi - h^2\pi \text{ cm}^2$

(c) –

(d) –

(e)  $\frac{1,024\pi}{3} \text{ cm}^3$

(f)  $\frac{2,048\pi}{3} \text{ cm}^3$

189.  $\sqrt{r^2 - d^2}$

190. –

191.  $\frac{29}{4}$

192. 66.33

193. (a) 120

(b)  $25r$

(c)  $\frac{24}{5}$

194. (a) –

(b) –

(c) 1

195. 4, 9, 13, 12

196. (a)  $2\pi rh - \pi h^2 \text{ cm}^2$

- (b)  $2\pi rh - \pi h^2 \text{ cm}^2$
  - (c)  $-$
  - (d)  $-$
  - (e)  $\frac{2\pi r^3}{3} \text{ cm}^3$
  - (f)  $\frac{4\pi r^3}{3} \text{ cm}^3$
197.  $8 \text{ in.}$
198.  $2.21 \text{ cm}$
199.  $-$
200. (a)  $-$   
 (b)  $R - r$   
 (c)  $-$
201.  $1.5 - \frac{\sqrt[3]{19}}{2} \text{ cm}$
202. (a)  $\frac{1}{3}$   
 (b)  $\frac{2}{3}$
203.  $8\sqrt{3}$
204.  $12\pi + 36 \text{ in.}$
205.  $V = 9\sqrt{3}\pi, SA = 27\pi$
206. (a)  $4.52 \text{ in.}^2$   
 (b)  $452 \text{ in.}^2$
207.  $x^3 - y^3$
208.  $-$
209. (a)  $h = 8, V = 72\pi$   
 (b)  $V(r) = 2\pi r^2 \sqrt{25 - r^2}$   
 (c)  $302.30$
210. (a)  $-$   
 (b)  $\frac{2}{3}$  (Assume the sphere is tangent to both bases and the lateral surface of the cylinder)
211. (a)  $-$   
 (b)  $y = -\frac{4}{3}(x - 4) + 3$   
 (c)  $(\frac{25}{4}, 0)$   
 (d)  $y = \frac{4}{3}(x - 4) - 3$

212. –
213. (a)  $\frac{4}{3}\pi(R^3 - r^3)$   
 (b) –  
 (c) –  
 (d)  $BA = \frac{4}{3}\pi(R^2 + Rr + r^2)$   
 (e)  $4\pi R^2$   
 (f)  $SA = 4\pi R^2$
214.  $3,364\pi cm^2$
215. (a) 67%  
 (b)  $LA = 12\pi r^2$ ,  $SA = 12\pi r^2$
216. (a) 3 : 2  
 (b) 9 : 4  
 (c) 27 : 8
217. (a) 3  
 (b)  $r = \frac{w\sqrt{100-w^2}}{10+w}$   
 (c) –
218.  $\pi$
219. –
220. –
221. 57.30, 6
222.  $y = -\frac{5}{12}(x - 13)$  or  $y = \frac{5}{12}(x - 13)$
223. 80
224.  $10\pi + 4\sqrt{3}$
225. Skip
226. 125 : 343
227. –
228. –
229. (a)  $2\pi r$   
 (b)  $\pi r$   
 (c)  $r$

230. (a)  $\frac{3}{2}$   
(b)  $\left(\frac{270}{\pi}\right)^\circ$

231. 15 in.

232.  $\left(-\frac{1}{2}, -\frac{\sqrt{3}}{2}\right), \left(-\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$