1. Correct Answer: $-\frac{14}{45}(5x^3 + 2)^{\frac{3}{2}} + C$

2. Correct Answer: $-\frac{1}{6}\left(3 + \frac{1}{t}\right)^6 + C$

3. Correct Answer: $\frac{69505008}{5} = 13901001.60$

4. Correct Answer: $\frac{1331}{3}$

5. Correct Answer: $-\frac{\pi}{4} + \frac{3\sqrt{3}}{4}$

6. Correct Answer: $\frac{5x^2\ln(3x^2)}{2} - \frac{5x^2}{2} + C$

7. Correct Answer: $-\ln|x| + 2\ln|x - 7| - \ln|x + 2| + C$

8. Correct Answer: $\frac{\ln 7}{12}$

9. Correct Answer: $\frac{2}{5}\tan^2(5x) + \frac{2}{5}\tan^4(5x) + \frac{2}{15}\tan^6(5x) + C$

10. Correct Answer: $\frac{9}{8}x - \frac{1}{12}\sin(18x) + \frac{1}{96}\sin(36x) + C$

11. Correct Answer: $x = 6\sin\theta, \theta = 36 - x^2$

12. Correct Answer: $L \approx 9.113$

13. Correct Answer: $\frac{22}{3}(z + 5)^{\frac{3}{2}} - \frac{22}{3}z^{\frac{3}{2}} + C$

14. Correct Answer: $\frac{1}{6}\ln\left|\frac{\sqrt{5x^2+36}-6}{\sqrt{5}x}\right| + C$

15. Correct Answer: $\frac{193}{6}$ cubic feet

16. Correct Answer: $3\tan^{-1}(7x) + C$

17. Correct Answer: $\frac{-74}{9}$

18. Correct Answer: $\frac{x^7 \ln(x)}{7} - \frac{x^7}{49} + C$

19. Correct Answer: $\frac{4}{z+1} + 2\ln|z| - 2\ln|z + 1| + C$

20. Correct Answer: $\frac{2}{7}\tan^2(7x) + \frac{2}{7}\tan^4(7x) + \frac{2}{21}\tan^6(7x) + C$

21. Correct Answer: $\frac{3}{4}\ln\left|4t + \sqrt{16t^2 - 81}\right| + C$

22. Correct Answer: $\frac{7}{3}(\tan u - 8)\sqrt{8 + 2\tan u} + C$

23. Correct Answer: convergent, $\frac{1}{1029}$