

SECTION 8.5 (page 594)

Prerequisite Review

1. $-\frac{\sqrt{2}}{2}$ 2. $-\frac{1}{2}$ 3. $-\frac{\sqrt{3}}{2}$ 4. $\frac{\sqrt{3}}{2}$
 5. $-\frac{\sqrt{3}}{3}$ 6. $-\frac{\sqrt{3}}{3}$ 7. -1 8. 0
 9. $\tan x$ 10. $\cot x$ 11. $\sin^2 x$ 12. $\cos^2 x$
 13. 1 14. $\cos x$ 15. $\csc x$ 16. $\cos x \sin x$
 17. $\frac{8\pi}{3}$ 18. $\frac{4}{3}$ 19. 4 20. $\frac{17}{4}$

1. $-2 \cos x + 3 \sin x + C$ 3. $t + \csc t + C$
 5. $-\cot \theta - \sin \theta + C$ 7. $-\frac{1}{2} \cos 2x + C$
 9. $\frac{1}{2} \sin x^2 + C$ 11. $2 \tan \frac{x}{2} + C$
 13. $-\frac{1}{3} \ln|\cos 3x| + C$ 15. $\frac{1}{4} \tan^4 x + C$
 17. $\frac{1}{\pi} \ln|\sin \pi x| + C$
 19. $\frac{1}{2} \ln|\csc 2x - \cot 2x| + C$ 21. $\frac{1}{2} \ln|\tan 2x| + C$
 23. $\ln|\sec x - 1| + C$ 25. $-\ln|1 + \cos x| + C$
 27. $\frac{1}{2} \tan^2 x + C$ 29. $-\cos e^x + C$
 31. $e^{\sin x} + C$ 33. $x - \frac{1}{4} \cos 4x + C$
 35. $x \sin x + \cos x + C$ 37. $x \tan x + \ln|\cos x| + C$
 39. $\frac{3\sqrt{3}}{8} \approx 0.6495$ 41. $2(\sqrt{3} - 1) \approx 1.4641$
 43. $\frac{1}{2}$ 45. $\ln(\cos 0) - \ln(\cos 1) \approx 0.6156$
 47. 4 49. $\frac{\pi^2}{2} + 2 \approx 6.9348$ 51. 2 53. π
 55. Trapezoidal Rule: 1.3655
 Simpson's Rule: 1.3708
 Graphing utility: 1.3708
 57. (a) 225.28 million barrels
 (b) 225.28 million barrels
 (c) 217 million barrels
 59. 18.54 inches
 61. (a) $C \approx \$9.17$ (b) $C \approx \$3.14$, savings $\approx \$6.03$
 63. 0.5093 liter 65. 0.9777 67. 3.8202
 69. True 71. False. $\int \sin^2 2x \cos 2x \, dx = \frac{1}{6} \sin^3 2x + C$

SECTION 8.6 (page 603)

Prerequisite Review

1. ∞ 2. ∞ 3. 0 4. 0 5. $\frac{2}{3}$ 6. 1
 7. ∞ 8. ∞ 9. $-2x \sin x^2$
 10. $5 \cos(5x - 1)$ 11. $4 \sec(4x) \tan(4x)$
 12. $2x \sec^2(x^2 - 2)$ 13. $-4 \sin(2x + 3)$
 14. $-\frac{\cos(x/2)}{4}$ 15. $2 \sec^2 x \tan x$
 16. $2 \csc^2 x \cot x$

1. Yes 3. No 5. Yes

7.

x	-0.1	-0.01	-0.001	0
$f(x)$	-0.35	-0.335	-0.3335	?

x	0.001	0.01	0.1
$f(x)$	-0.3332	-0.332	-0.32

$$\lim_{x \rightarrow 0} \frac{e^{-x} - 1}{3x} = -\frac{1}{3}$$

9.

x	-0.1	-0.01	-0.001	0
$f(x)$	0.1997	0.2	0.2	?

x	0.001	0.01	0.1
$f(x)$	0.2	0.2	0.1997

$$\lim_{x \rightarrow 0} \frac{\sin x}{5x} = \frac{1}{5}$$

11. 0 13. -1 15. -3 17. -1 19. $\frac{1}{5}$
 21. 0 23. -3 25. 1 27. 0 29. $\frac{4}{3}$ 31. 0
 33. $\frac{1}{2}$ 35. $\frac{2}{5}$ 37. $\frac{2}{3}$ 39. 1 41. $-\frac{1}{2}$ 43. ∞
 45. 0 47. ∞ 49. 1 51. 0 53. 0 55. 0
 57. 0 , so e^{4x} grows more rapidly than x^2 .
 59. 0 , so x grows more rapidly than $(\ln x)^4$.
 61. 0 , so x^m grows more rapidly than $(\ln x)^n$.