Section 3.7

56) $\dfrac{t\sec\left(\sqrt{t^2-9}\right)\tan\left(\sqrt{t^2-9}\right)}{\sqrt{t^2-9}}$

80) 7

Section 3.8

30. $y = \frac{8}{7} - \frac{1}{14}x$

Section 3.9

26. $y' = \dfrac{x}{1+x^2} + \tan^{-1} x$

28. $\dfrac{e^x}{\sqrt{1-e^{2x}}}$

Section 3.10

16. Using properties of logs first to split up y, then $y' = \dfrac{1}{x+1} - \dfrac{3x^2}{x^3+1}$.

32. $y = (x - \pi/4) + \ln(\sqrt{2}/2)$

36. $f'(x) = x^{\cos x}\left(\dfrac{\cos x}{x} - \sin x \ln x\right)$

44. $y' = \dfrac{x(x^2+1)}{\sqrt{x+1}}\left(\dfrac{1}{x} + \dfrac{2x}{x^2+1} - \dfrac{1}{2(x+1)}\right)$

46. $y' = \dfrac{1}{2}\sqrt{\dfrac{x(x+2)}{(2x+1)(2x+2)}}\cdot\left(\dfrac{1}{x} + \dfrac{1}{x+2} - \dfrac{2}{2x+1} - \dfrac{1}{x+1}\right)$

Section 3.11

10. $\dfrac{9}{8\pi}$ m/min

24. $\dfrac{800\pi}{3}$ cm^3/sec

26. a) QIII & QIV b) $18x\dfrac{dx}{dt} + 32y\dfrac{dy}{dt} = 0$ c) $-\dfrac{32}{3}$ ft/s d) $\dfrac{dy}{dt} = 0$

Chapter 3 Review Problems

48. $\dfrac{dy}{dt} = \dfrac{1 + \sec t - t\sec t\tan t}{(1+\sec t)^2}$

84. $K'(2) = -8$

Section 4.2

18. CP: $x = \pi/4$; maximum is $f(\pi/4) = \sqrt{2}$; minimum is $f(0) = f(\pi/2) = 1$.

32. CP: $x = 1$ and $x = -3$; maximum is $f(2) = 4$; minimum is $f(1) = -3$.

40. CP: $x = \dfrac{1}{\sqrt{3}}, x = -\dfrac{1}{\sqrt{3}}$; minimum of f is $f\left(\dfrac{1}{\sqrt{3}}\right) = \sqrt{3}$ and the maximum of f is $f(2) = 2\sqrt{5} - 2$

52. CP: $x = 1$; maximum is $f(1) = e^{-1}$; minimum is $f(0) = 0$.

Section 4.3

24. CP: $x = -1, x = \frac{1}{2}$ and $x = 2$; $f(-1)$ neither; $f(1/2)$ local max; $f(2)$ local min

48.

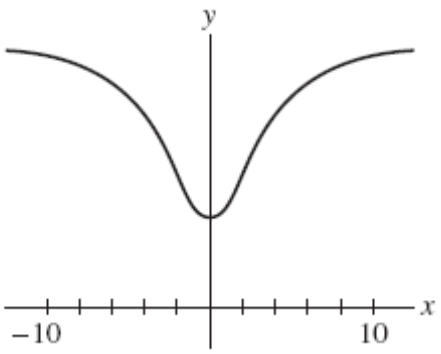
x	$(-\infty, -2)$	-2	$(-2, 0)$	0	$(0, \infty)$
f'	+	0	−	0	+
f	↗	M	↘	m	↗

Section 4.4

8. f is concave up on $(1, \infty)$ and concave down on $(-\infty, 1)$; point of inflection at $x = 1$.

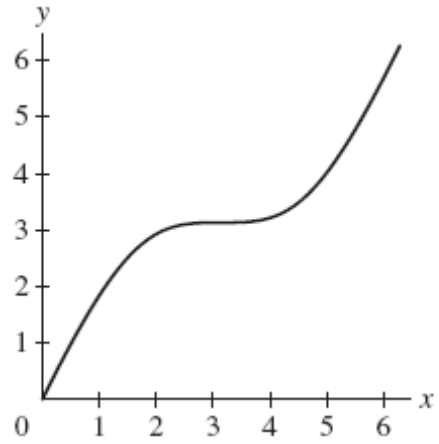
24. $f(-2) = -15$ and $f(2) = -15$ are local minima, and $f(0) = 1$ is a local maximum.

58.



Section 4.5

42. Inflection point: $x = \pi$; No local max/min



Section 4.5 (continued)

72. Left curve is the graph of $f(x) = \frac{3x}{x^2 - 1}$

Chapter 4 Review Problems

44.