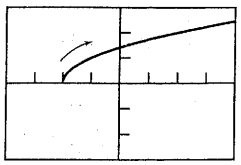
**5. (a)**



[–4, 4] by [–3, 3]

**(b)** One possible answer:
$y = \sqrt{x + 2}$; entire curve

**6.** One possible answer:
$x = 13 - 6t,\ y = 5 + 3t,\ 0 \le t \le 1$

**7.** $f^{-1}(x) = -\ln\left(\frac{20}{3x} - \frac{1}{3}\right)$

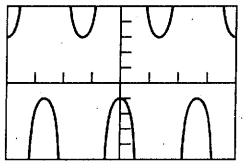
**8.** $x = \frac{\ln 5}{\ln 1.08} \approx 20.91$

**9. (a)** $\frac{2\pi}{3}$

**(b)** $x \ne \frac{\pi}{6} + \frac{k\pi}{3}$ for integers $k$

**(c)** $(-\infty, -1] \cup [3, \infty)$

**(d)**



[$-\pi$, $\pi$] by [–5, 5]

**10.** $x = \sin^{-1}(0.2) \approx 0.201$,
$x = \pi - \sin^{-1}0.2 \approx 2.940$

**11.** (B)

**12.** $\frac{9}{2}$

**13. (a)** $-\infty$ **(b)** 1
**(c)** $\infty$ **(d)** 1

**14.** $\frac{3}{2}x^3$

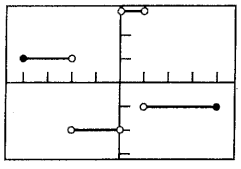
**15.** $x = -4$ (infinite discontinuity),
$x = 4$ (jump discontinuity)

**16.** $g(x) = \frac{x + 4}{x - 3}$

**17. (a)** $-48$ ft/sec **(b)** $-64$ ft/sec

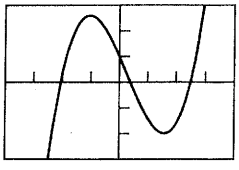
**18.** No; left- and right-hand derivatives are not the same.

**19.**



[–4.7, 4.7] by [–3.1, 3.1]

**20.**

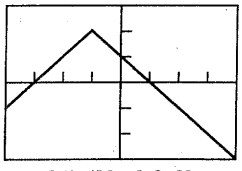


[–4, 4] by [–3, 3]

## Semester Test Chapters 1–4 Form A

**1. (a)** $y = \frac{4}{5}x - 7$ **(b)** $y = -\frac{5}{4}x + \frac{13}{4}$

**2. (a)**



[–4, 4] by [–3, 3]

**(b)** All reals **(c)** $(-\infty, 2]$

**3.** (B)

**4.** $\approx 19.525$ years

**21.** $\left(0, \frac{2}{5}\right) \cup \left(\frac{2}{5}, \infty\right)$ **22.** (B)

**23.** $\frac{x^2 - 2x - 14}{(x-1)^2}$

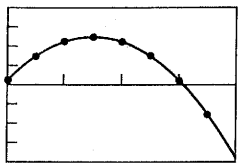
**24. (a)** $4x^3 - 15x^2 + 9$ **(b)** $12x^2 - 30x$

**25. (a)** 242.5 m **(b)** 48.5 m/min

**(c)** 148.5 m/min **(d)** 60 m/min$^2$

**(e)** $t = 0.5$ min

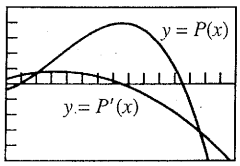
**26. (a)**



[0, 40] by [–8, 8]

**(b)** $t = 10$: $\approx 0.2$ ft/sec
$t = 25$: $\approx -0.4$ ft/sec

**27. (a)**




[0, 15] by [–5000, 5000]

**(b)** \$480.00 **(c)** \$1711.11

**(d)** \$3920.00

**28.** $\frac{12 \sec^2 x - 3 \sec x - 3 \tan x \sin x}{(4 - \cos x)^2}$

**29.** $6x \sec(3x^2) \tan(3x^2)$ **30.** 81

**31.** $y = \sqrt{3}x - 2$ **32.** $\frac{4x + y \sin xy}{3 - x \sin xy}$

**33.** $\frac{1}{1 + (x-4)^2}$ **34.** (B)

**35.** $2e^{2x} - \frac{2}{x}$

**36.** Min: 1 at $x = 0$
Max: 3 at $x = 1$

**37. (a)** $[0, \infty)$ **(b)** $(-\infty, 0]$

**(c)** $\left(-\infty, \frac{1}{3}\right), (1, \infty)$ **(d)** $\left(\frac{1}{3}, 1\right)$

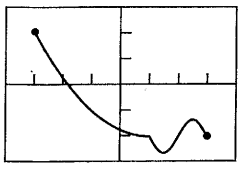
**(e)** Min: $-3$ at $x = 0$
Max: None

**(f)** $\left(\frac{1}{3}, -\frac{961}{324}\right), \left(1, -\frac{35}{12}\right)$

**38.** (D)

**39.** $f(x) = \frac{4x^3}{3} - 3x - \cos x + C$

**40.**



[–4, 4] by [–3, 3]

**41. (a)** $V(x) = \left(\frac{35 - 2x}{2}\right)(22 - 2x)(x)$
$= 2x^3 - 57x^2 + 385x$

**(b)** Domain: (0, 11)

**(c)** Volume $\approx 760.850$ in$^3$ at $x \approx 4.393$

**42.** $a = 3$; $b = -45$