ANSWERS

SHOW ALL WORK clearly.

1. $\frac{1}{2}x^{8/3}$
2. $3-\frac{6}{\sqrt{x}}+4x^6$
3. $\frac{x-1}{2}$
4. $\frac{(x+2)(x+3)}{x-3}$
5. $x=1$
6. $x=11$
7. $x=0$
8. $x=\pm\frac{1}{2}$
9. $x=\pm 2,\pm\sqrt{3}$
10. $x=0,e$
11. $x=-3,1$
12. $x=-\frac{5}{2},2,\frac{5}{2}$
13. $x=5$
14. $x=-1$
15. $x=2,4$
16. $x=\pm\sqrt{\frac{5\pm\sqrt{13}}{2}}$
17. $\left[0,\frac{1}{2}\right]\cup[3,\infty)$
18. $(2,7]$
19. $4x(x-3)(x^2-x+6)$
20. $-(x-3)(x+3)$
21. $2\sqrt{x}(1+3x-5x^{3/2})$
22. $(g\circ f)(x)=x-4$
23. $2\sqrt{3}$
24. $(-\infty,-2]\cup[2,\infty)$
25. Domain = all real numbers, Range $=(-\infty,4)$
26. $\begin{cases} 2x+2, x<-3 \\ -2x-10, x\geq -3 \end{cases}$; domain = all reals, range $=(-\infty,-4]$
27. Upper semicircle centered at (0, 0) with radius r = 4; domain is $[-4,4]$, range is $[0, 4]$
28. Domain = all reals, Range $=(-\infty,2]\cup[4,\infty)$
29. a. 7 b. -6 c. 4 d. 4 e. 1.31
30. As $x\to-\infty, g(x)\to+\infty$, As $x\to+\infty, g(x)\to-\infty$
31. Hole at $\left(2,\frac{5}{8}\right)$; vertical asymptote $x=0$ and $x=-2$; horizontal asymptote $y=0$
32. a) $f(x+h)=2x^2+4xh+2h^2+1$ and b) $f(x+h)-f(x)=4xh+2h^2$
33. It is even because $f(-x)=f(x)$.
34. origin
35. $f^{-1}(x)=\frac{-7-2x}{3-x}$; $f^{-1}(-10)=1$
36. $2x-3y=12$
37. $y=3x^2-12x+7$
38. $(3,16),(-1,-4)$
39. $(0,2),(2,0)$
40. $[-5,-2)\cup(-2,\infty)$
41. a. -1 b. undefined c. $-\frac{\sqrt{3}}{2}$ d. -1
42. a. $\frac{\pi}{3}$ b. π c. $\frac{\pi}{3}$ d. $\frac{\pi}{2}$
43. $\frac{\sqrt{3}}{2}+\frac{3}{4}$
44. $\frac{5\pi}{6},\frac{7\pi}{6}$
45. $\frac{\pi}{6},\frac{\pi}{2},\frac{5\pi}{6},\frac{3\pi}{2}$
46. $\frac{\pi}{6},\frac{\pi}{2},\frac{5\pi}{6}$
47. $0,\frac{\pi}{2},\pi$