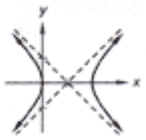
problem set 31

2. $-4320x^{24}y^3$ 4. (*a*) Parabola; (*b*) circle; (*c*) hyperbola; (*d*) ellipse

6. Center: (1, 0); vertices: (2, 0), (0, 0); foci: $(1 - \sqrt{2}, 0), (1 + \sqrt{2}, 0)$; asymptotes: $y = x - 1, y = -x + 1$



8. $x = 3, y = 0$ 10. $x > 4$ 12. $\frac{2}{x^2}$

14. Domain of $\frac{f}{g}$: $\{x \mid 0 < x < \infty\}$

16. $-90°$ 18. $x = \frac{2h\sqrt{3}}{3}$ 20. (*a*) $8i$; (*b*) $8i$; (c) $8i$ 22. *D*

problem set 32

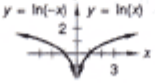
2. cis 18°, cis 90°, cis 162°, cis 234°, cis 306° 4. $\frac{7\pi}{18}, \frac{11\pi}{18}, \frac{19\pi}{18}, \frac{23\pi}{18}, \frac{31\pi}{18}, \frac{35\pi}{18}$

6. $\frac{x^2}{4} + \frac{(y-2)^2}{1} = 1$

8. $x^7 + 7x^6\Delta x + \frac{7!}{5!\,2!}x^5(\Delta x)^2 + \frac{7!}{4!\,3!}x^4(\Delta x)^3 + \frac{7!}{3!\,4!}x^3(\Delta x)^4 + \frac{7!}{2!\,5!}x^2(\Delta x)^5 + 7x(\Delta x)^6 + (\Delta x)^7$

10. $y = \frac{1}{x+2} + 3$ 12. $3x^2$ 14. Domain of both *f* and *g*: set of all real numbers

16. $\frac{3}{2}$ 18.

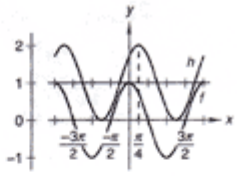


20. $k = -2$ 22. $4\sqrt{3}$

problem set 33

2. $\frac{dy}{dx} = 3x^2$ 4. $\frac{ds}{dt} = \frac{-3}{t^4}$ 6. $\frac{dy}{dx} = \frac{-2}{x^3}$

8. $\frac{2\pi}{9}, \frac{4\pi}{9}, \frac{8\pi}{9}, \frac{10\pi}{9}, \frac{14\pi}{9}, \frac{16\pi}{9}$ 10. -280 12.



14. $y = \frac{\ln x}{\ln 10}$

16. $(f \circ g)(x) = |x - 4|$, $(g \circ f)(x) = \sqrt{x^2 - 4}$

18. $-\infty$

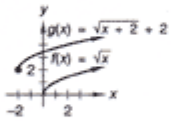
20. $y \in (L - 0.001, L + 0.001)$ 22. 40°

problem set 34

2. $\frac{\tan A + \tan B}{1 - \tan A \tan B}$ 4. $4\pi\ \text{m}^2$ 6. $5\sqrt{3}\ \text{m}^3$ 8. $f'(x) = \frac{3}{2}\sqrt{x}$ 10. $D_x y = 14x^{13}$

12. $x = \frac{\pi}{9}, \frac{5\pi}{9}, \frac{7\pi}{9}, \frac{11\pi}{9}, \frac{13\pi}{9}, \frac{17\pi}{9}$ 14. $\{x \mid x = \text{any integer}\}$

16.



18. -1 20. 1 22. 2

problem set 35

2. $f'(x) = x^4 - 10x^{-3} + 24x^3$ 4. $s'(t) = v_0 + at$ 6. $\frac{8}{27}\pi\ \text{cm}^3$

8. $\tan 2A = \frac{2\tan A}{1 - \tan^2 A}$; $\frac{4}{3}$ 10. $\theta = \frac{\pi}{3}, \pi, \frac{5\pi}{3}$

12. $\left(x - \frac{1}{2} - \frac{\sqrt{15}}{2}i\right)\left(x - \frac{1}{2} + \frac{\sqrt{15}}{2}i\right)$ 14. Never increases 16. $x = 1$

18. $(-\csc x) = -\csc^2 x$ 20. *C*