

- c. 25:1
- d. $\frac{3}{52}$
- 12. $\frac{1}{4}$
- 13. .0080
- 14a. $\frac{3}{8}$
- b. $\frac{1}{14}$

III. Matrices

15. $\begin{bmatrix} 4 & 8 & 2 \\ -2 & -2 & 1 \end{bmatrix}$

16. $\begin{bmatrix} -5 & 36 & 2 \\ -2 & 9 & 8 \\ 0 & 9 & -12 \end{bmatrix}$

17. $\begin{bmatrix} \frac{-17}{2} & 35 & 12 \\ 1 & \frac{-37}{2} & \frac{51}{2} \end{bmatrix}$

18. $\begin{bmatrix} \frac{1}{15} & \frac{2}{15} \\ \frac{-2}{5} & \frac{1}{5} \end{bmatrix}$

19. $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

20. 49

21. $\begin{bmatrix} 7 & 4 & -4 \\ 14 & 11 & -17 \\ -7 & 25 & -6 \end{bmatrix}$

22. a. $x = \frac{34}{23}$ and $y = \frac{16}{23}$
- b. $x = \frac{74}{13}$ and $y = -\frac{8}{13}$
- c. No Solution

IV. Conics

23. Parabolas

- a. opens down; V(-2,-3) F(-2,-5) directrix: $y = -1$, focal width 8
 - b. opens right; V(0,1) F(4,1) directrix: $x = -4$, focal width 16
 - c. opens up; V(0,4) F(0,5) directrix: $y = 3$, focal width 14
 - d. opens left; V(1,-6) F(-2,-6) directrix: $x = 4$, focal width 12
- 24a. C(-3,-2) V{(-11,-2)(5,-2)} EP{(-3,-9)(-3,5)} F(-3 $\pm\sqrt{15}$,-2)
major axis = 16; minor axis = 14

- b. $C(0,1) V\{(0,6)(0,-4)\} EP(\pm 4,1) F\{(0,4)(0,-2)\}$
 major axis = 10; minor axis = 8
- 25a. $C(-1,2) V\{(-1,6)(-1,-2)\}$ transverse axis = 8; conjugate axis = 10
 asymptotes: $(y-2) = \frac{\pm 4}{5}(x+1)$
- b. $C(-3,0) V\{(0,0)(-6,0)\}$ transverse axis = 6; conjugate axis = 16
 asymptotes: $y = \frac{\pm 8}{3}(x+3)$
- 26a. $(y+1) = \frac{1}{12}(x-3)^2$
- b. $(x+3) = \frac{-1}{28}(y+1)^2$
- c. $\frac{x^2}{100} + \frac{(y-2)^2}{75} = 1$
- d. $\frac{(x+3)^2}{64} + \frac{y^2}{81} = 1$
- e. $(x+6)^2 + (y-5)^2 = 20$
- f. $\frac{x^2}{25} - \frac{y^2}{24} = 1$
- 27a. $\frac{x^2}{16} - \frac{y^2}{25} = 1$
- b. $(x+2) = \frac{-1}{16}(y+1)^2$
- c. $\frac{y^2}{9} - \frac{x^2}{16} = 1$
- d. $\frac{(x+2)^2}{25} + \frac{(y-3)^2}{9} = 1$
- e. $\frac{(x-4)^2}{4} + \frac{y^2}{36} = 1$
- f. $(x+1)^2 + (y+3)^2 = 9$

VI. Parametrics

28.
$$\begin{cases} x = t \\ y = t^2 - 8 \end{cases} \quad \begin{cases} x = 1-t \\ y = (1-t)^2 - 8 \end{cases}$$

29.

t	-2	-1	0	1	2
x	-6	-4	-2	0	2
y	1	-2	-3	-2	1

30. $y = \left(\frac{x+2}{2}\right)^2 - 3$

2. $\angle S = 27.8, \angle T = 32.2, r = 26$
3. $\angle X = 12.7, \angle Y = 77.7, \angle Z = 90$
4. $\angle A = 36.2, \angle B = 100.3, \angle C = 43.5$
5. $\angle P = 20.7, \angle Q = 109.3, r = 6.49$
6. $\angle D = 22.2, \angle E = 42.8, f = 12.0$
7. $\angle A = 32.2, \angle B = 27.8, \angle C = 120.0$
8. $\angle X = 12., \angle Y = 77.7, \angle Z = 90$