

① $7 \begin{bmatrix} 1 & 2 & 3 \\ 1 & 0 & -4 \end{bmatrix} - 4 \begin{bmatrix} 4 & 1 & 3 \\ 1 & 2 & -1 \end{bmatrix}$

$\begin{bmatrix} 7 & 14 & 21 \\ -7 & 0 & -28 \end{bmatrix} + \begin{bmatrix} -16 & -4 & -12 \\ -4 & -8 & 4 \end{bmatrix}$

$\begin{bmatrix} -9 & 10 & 9 \\ -11 & -8 & -24 \end{bmatrix}$

② $\begin{bmatrix} 1 & 2 & 3 \\ 1 & 5 & 7 \end{bmatrix} \begin{bmatrix} 1 & 3 \\ 2 & 4 \\ 3 & 0 \end{bmatrix}$

$2 \times 3 \quad 3 \times 2$

2×2

$\begin{bmatrix} 1(1) + 2(2) + 3(3) & 1(3) + 2(4) + 3(0) \\ 1(1) + 5(2) + 7(3) & 1(3) + 5(4) + 7(0) \end{bmatrix}$

$\begin{bmatrix} 14 & 11 \\ 32 & 23 \end{bmatrix}$

③ $\det = \begin{vmatrix} 7 & 9 \\ 6 & -8 \end{vmatrix} = 7(-8) - 6(9) = \boxed{-110}$

④ $\begin{bmatrix} 1 & 3 \\ 2 & 4 \\ 3 & 0 \end{bmatrix} \begin{bmatrix} 1 & 2 & 3 \\ 1 & 5 & 7 \end{bmatrix}$

$3 \times 2 \quad 2 \times 3$

3×3

$\begin{bmatrix} 1(1) + 3(1) & 1(2) + 3(5) & 1(3) + 3(7) \\ 2(1) + 4(1) & 2(2) + 4(5) & 2(3) + 4(7) \\ 3(1) + 0(1) & 3(2) + 0(5) & 3(3) + 0(7) \end{bmatrix}$

$\begin{bmatrix} 4 & 17 & 24 \\ 6 & 24 & 34 \\ 3 & 6 & 9 \end{bmatrix}$

⑤ $\det = \begin{vmatrix} 4 & 3 & 4 & 3 \\ -2 & 0 & 5 & -2 & 0 \\ 1 & 6 & 2 & 1 & 6 \end{vmatrix}$

$4(0)(2) + 3(5)(1) + 1(-2)(6) - 1(0)(1) - 6(5)(4) - (2)(-2)(3)$

$0 + 15 + (-12) - 0 - 120 - (-12)$

$\boxed{-105}$

⑥ Inverse of $\begin{bmatrix} 3 & 2 \\ 7 & -5 \end{bmatrix}$

$$\frac{1}{3(-5) - 7(2)} \begin{bmatrix} -5 & -2 \\ -7 & 3 \end{bmatrix}$$

$$\frac{1}{-29} \begin{bmatrix} -5 & -2 \\ -7 & 3 \end{bmatrix}$$

$$\begin{bmatrix} \frac{5}{29} & \frac{2}{29} \\ \frac{7}{29} & -\frac{3}{29} \end{bmatrix}$$

⑦ $\det \begin{bmatrix} 4 & -1 \\ -9 & 2 \end{bmatrix}$

$$4(2) - (-9)(-1)$$

$$8 - 9$$

$$\boxed{-1}$$

⑧ inverse of $\begin{bmatrix} -5 & -18 \\ 2 & 7 \end{bmatrix}$

$$\frac{1}{-5(7) - 2(-18)} \begin{bmatrix} 7 & 18 \\ -2 & -5 \end{bmatrix}$$

$$\frac{1}{1} \begin{bmatrix} 7 & 18 \\ -2 & -5 \end{bmatrix}$$

$$\begin{bmatrix} 7 & 18 \\ -2 & -5 \end{bmatrix}$$

⑨ $\det \begin{bmatrix} 1 & -1 & -2 & 1 & -1 \\ -3 & 2 & -4 & -3 & 2 \\ -3 & -2 & -4 & -3 & -2 \end{bmatrix}$

$$1(2)(-4) + (-1)(-4)(-3) + (-2)(-3)(-2) -$$

$$-3(2)(-2) - (-2)(-4)(1) - (-4)(-3)(-1)$$

$$-8 + (-12) + (-12) - (12) - 8 - (-12)$$

$$\boxed{-40}$$

$$\textcircled{10} \quad 3 \begin{bmatrix} -2 & 3 & 6 \\ 0 & -1 & 7 \\ -5 & 3 & 6 \end{bmatrix}$$

$$\begin{bmatrix} -6 & 9 & 18 \\ 0 & -3 & 21 \\ -15 & 9 & 18 \end{bmatrix}$$

$$\textcircled{11} \quad \begin{bmatrix} -1 & 5 \\ 3 & -2 \end{bmatrix} \begin{bmatrix} 0 & 3 \\ 4 & -6 \end{bmatrix}$$

$$\begin{matrix} 2 \times 2 & 2 \times 2 \\ \text{---} & \text{---} \\ & 2 \times 2 \end{matrix}$$

$$\begin{bmatrix} -1(0) + 5(4) & -1(3) + 5(-6) \\ 3(0) + -2(4) & 3(3) + -2(-6) \end{bmatrix}$$

$$\begin{bmatrix} 20 & -33 \\ -8 & 21 \end{bmatrix}$$

$$\textcircled{12} \quad \det \begin{vmatrix} 2 & -3 \\ 5 & 4 \end{vmatrix} = 2(4) - (5)(-3) = \boxed{23}$$

$$\textcircled{13} \quad \det \begin{vmatrix} 0 & 1 & -2 & 0 & 1 \\ 5 & 3 & 0 & 5 & 3 \\ -1 & 2 & -2 & -1 & 2 \end{vmatrix}$$

$$0(3)(-3) + 1(0)(-1) + (-2)(5)(2) - (-1)(3)(-2) - 2(0)(0) - (-3)(5)(1)$$

$$0 + 0 + (-20) - 6 - 0 - (-15)$$

$$\boxed{-11}$$

$$\textcircled{14} \quad \begin{bmatrix} -1 & 5 \\ 3 & -2 \end{bmatrix} \begin{bmatrix} 0 & 3 \\ 4 & -6 \end{bmatrix}$$

$$\begin{matrix} 2 \times 2 & 2 \times 2 \\ \text{---} & \text{---} \\ & 2 \times 2 \end{matrix}$$

$$\begin{bmatrix} -1(0) + 5(4) & -1(3) + 5(-6) \\ 3(0) + -2(4) & 3(3) + -2(-6) \end{bmatrix}$$

$$\boxed{\begin{bmatrix} 20 & -33 \\ -8 & 21 \end{bmatrix}}$$

(15)

$$\begin{bmatrix} 1 & -1 \\ 2 & -3 \end{bmatrix} X = \begin{bmatrix} -4 \\ 8 \end{bmatrix}$$

Find inverse of $\begin{bmatrix} 1 & -1 \\ 2 & -3 \end{bmatrix}$

$$\frac{1}{1(-3) - 2(-1)} \begin{bmatrix} -3 & 1 \\ -2 & 1 \end{bmatrix} = \frac{1}{-1} \begin{bmatrix} -3 & 1 \\ -2 & 1 \end{bmatrix}$$

$$\begin{bmatrix} 3 & -1 \\ 2 & -1 \end{bmatrix}$$

Now, $X = \begin{bmatrix} 3 & -1 \\ 2 & -1 \end{bmatrix} \begin{bmatrix} -4 \\ 8 \end{bmatrix}$

$\begin{matrix} 2 \times 2 & 3 \times 1 \\ \text{---} & \text{---} \\ & 2 \times 1 \end{matrix}$

$$X = \begin{bmatrix} 3(-4) + (-1)(8) \\ 2(-4) + (-1)(8) \end{bmatrix}$$

$$X = \begin{bmatrix} -20 \\ -16 \end{bmatrix}$$

(16) $\begin{bmatrix} 2x-5 & a \\ b & y+b \end{bmatrix} = \begin{bmatrix} 5 & -2 \\ 7 & -4 \end{bmatrix}$

$$\begin{aligned} 2x-5 &= 5 \\ 2x &= 10 \\ \boxed{x=5} \end{aligned}$$

$$\begin{aligned} \boxed{a=-2} \\ \boxed{b=7} \end{aligned}$$

$$\begin{aligned} y+b &= -4 \\ \boxed{y=-10} \end{aligned}$$

(17)

$$\begin{bmatrix} 9 & -3 \\ 2 & 7 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 25 \\ 43 \end{bmatrix}$$

$$\begin{bmatrix} x \\ y \end{bmatrix} = \left[\begin{array}{cc|c} 9 & -3 & 25 \\ 2 & 7 & 43 \end{array} \right]$$

$$\begin{bmatrix} x \\ y \end{bmatrix} = \left[\begin{array}{cc|c} 1 & 0 & \frac{304}{69} \\ 0 & 1 & \frac{337}{69} \end{array} \right]$$

$$\left(\frac{304}{69}, \frac{337}{69} \right)$$

(18)

$$\begin{bmatrix} 1 & -1 & 2 \\ 3 & -5 & 7 \\ 9 & 3 & -8 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 22 \\ 20 \\ 8 \end{bmatrix}$$

$$\begin{bmatrix} x \\ y \\ z \end{bmatrix} = \left[\begin{array}{ccc|c} 1 & -1 & 2 & 22 \\ 3 & -5 & 7 & 20 \\ 9 & 3 & -8 & 8 \end{array} \right]$$

$$\begin{bmatrix} x \\ y \\ z \end{bmatrix} = \left[\begin{array}{ccc|c} 1 & 0 & 0 & \frac{201}{20} \\ 0 & 1 & 0 & \frac{693}{20} \\ 0 & 0 & 1 & \frac{233}{10} \end{array} \right]$$

$$\left(\frac{201}{20}, \frac{693}{20}, \frac{233}{10} \right)$$

19) $\frac{x^2}{16} - \frac{(y+1)^2}{16} = 1$ Hyperbola

Center: $(0, -1)$

Vertices: $(4, -1)$ $(-4, -1)$

Foci: $(5.7, -1)$ $(-5.7, -1)$

Asy: $y = \pm \frac{4}{4}(x) - 1$

$y = \pm x - 1$

$$a^2 = 16$$

$$a = \pm 4$$

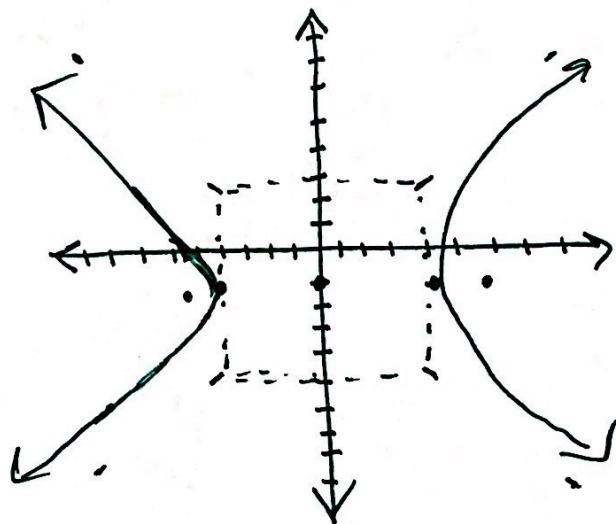
$$b^2 = 16$$

$$b = \pm 4$$

$$c^2 = 16 + 16$$

$$\sqrt{c^2} = \sqrt{32}$$

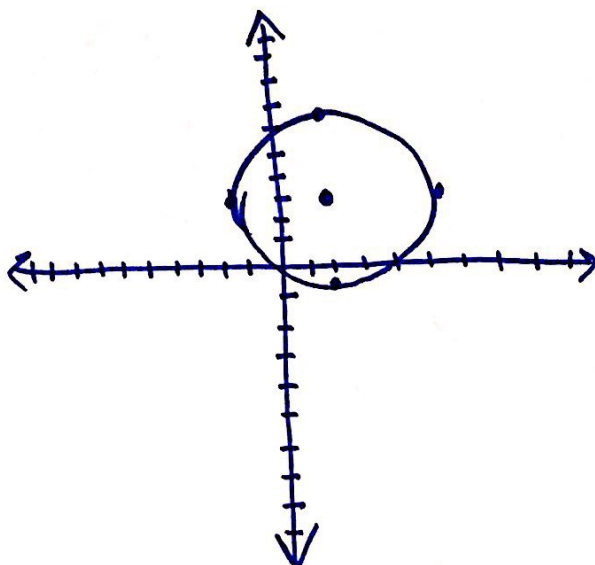
$$c = \pm 5.7$$



20) $(x-2)^2 + (y-3)^2 = 15$ Circle

Center: $(2, 3)$

Radius: $\sqrt{15} \approx 3.9$



② $\frac{(x-1)^2}{9} + \frac{(y-2)^2}{25} = 1$ Ellipse

Center: (1, 2)

Vertices: (1, 7) (1, -3)

Co-Vertices: (4, 2) (-2, 2)

Foci: (1, 6) (1, -2)

$$a^2 = 25$$

$$a = \pm 5$$

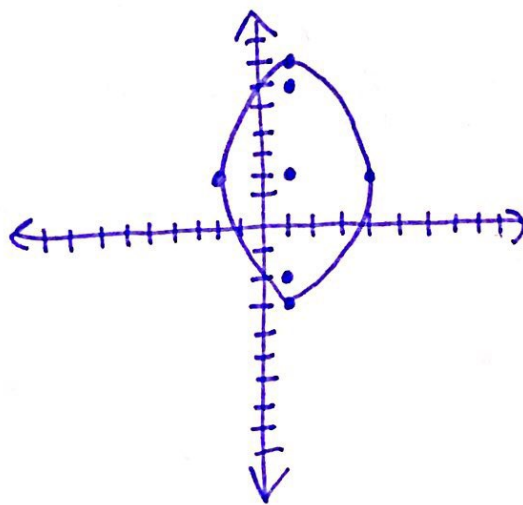
$$b^2 = 9$$

$$b = \pm 3$$

$$c^2 = 25 - 9$$

$$c^2 = 16$$

$$c = \pm 4$$



② $y - 3 = (x - 4)^2$ Parabola
 $y = (x - 4)^2 + 3$

Vertex: (4, 3)

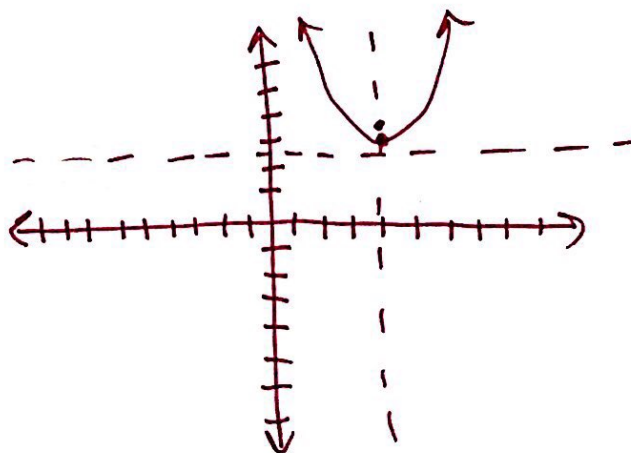
AOS: $x = 4$

Focus: (4, 3.25)

Directrix: $y = 2.75$

$$4p = 1$$

$$p = \frac{1}{4}$$



$$(23) \quad 4x^2 + 9y^2 - 56x + 16 = 0$$

$$4x^2 - 56x + 9y^2 = -16$$

$$4(x^2 - 14x) + 9y^2 = -16$$

$$4(x^2 - 14x + 49) + 9y^2 = -16 + 196$$

$$\frac{4(x-7)^2}{180} + \frac{9y^2}{180} = \frac{180}{180}$$

$$\boxed{\frac{(x-7)^2}{45} + \frac{y^2}{20} = 1}$$

Ellipse

$$(24) \quad x^2 + y^2 + 14x - 20y + 113 = 0$$

$$x^2 + 14x + y^2 - 20y = -113$$

$$(x^2 + 14x + 49) + (y^2 - 20y + 100) = -113 + 49 + 100$$

$$\boxed{(x+7)^2 + (y-10)^2 = 36}$$

Circle

$$(25) \quad 4x^2 - 9y^2 + 40x + 108y - 260 = 0$$

$$4x^2 + 40x - 9y^2 + 108y = 260$$

$$4(x^2 + 10x) - 9(y^2 - 12y) = 260$$

$$4(x^2 + 10x + 25) - 9(y^2 - 12y + 36) = 260 + 100 - 324$$

$$\frac{4(x+5)^2}{36} - \frac{9(y-6)^2}{36} = \frac{36}{36}$$

$$\boxed{\frac{(x+5)^2}{9} - \frac{(y-6)^2}{4} = 1}$$

Hyperbola

$$(26) \quad 3x^2 + 24x - y + 20 = 0$$

$$3x^2 + 24x - y = -20$$

$$3(x^2 + 8x) - y = -20$$

$$3(x^2 + 8x + 16) - y = -20 + 48$$

$$3(x+4)^2 - y = 28$$

$$\frac{3(x+4)^2}{3} = \frac{(y+28)}{3}$$

$$\boxed{(x+4)^2 = \frac{1}{3}(y+28)}$$

Parabola

$$(27) \quad 9x^2 + 4y^2 + 54x - 64y + 301 = 0$$

$$9x^2 + 54x + 4y^2 - 64y = -301$$

$$9(x^2 + 6x) + 4(y^2 - 16y) = -301$$

$$9(x^2 + 6x + 9) + 4(y^2 - 16y + 64) = -301 + 81 + 256$$

$$\frac{9(x+3)^2}{36} + \frac{4(y-8)^2}{36} = \frac{36}{36}$$

$$\boxed{\frac{(x+3)^2}{4} + \frac{(y-8)^2}{9} = 1}$$

Ellipse

$$\textcircled{28} \quad x^2 + 9y^2 - 2x + 90y + 190 = 0$$

$$x^2 - 2x + 9y^2 + 90y = -190$$

$$(x^2 - 2x) + 9(y^2 + 10y) = -190$$

$$(x^2 - 2x + 1) + 9(y^2 + 10y + 25) = -190 + 1 + 225$$

$$\frac{(x-1)^2}{36} + \frac{9(y+5)^2}{36} = \frac{36}{36}$$

$$\boxed{\frac{(x-1)^2}{36} + \frac{(y+5)^2}{4} = 1}$$

Ellipse

$$\textcircled{29} \text{ a } V: (3, -2) \text{ \& } (-9, -2)$$

$$C F: (7, -2) \text{ \& } (-13, -2)$$

$$\text{Center: } \left(\frac{3+(-9)}{2}, \frac{-2+(-2)}{2} \right) = \left(\frac{-6}{2}, \frac{-4}{2} \right) = (-3, -2)$$

$$a = \frac{3 - (-9)}{2} = \frac{12}{2} = 6 \quad a^2 = 36$$

$$c = \frac{7 - (-13)}{2} = \frac{20}{2} = 10 \quad c^2 = 100$$

$$36 + b^2 = 100$$

$$b^2 = 64$$

$$\boxed{\frac{(x+3)^2}{36} - \frac{(y+2)^2}{64} = 1}$$

(30) Center: $(2, -5)$ $r = 16$

$$(x-2)^2 + (y+5)^2 = 256$$

(31) $20(y-7) = \frac{1}{20}(x-2)^2$ ~~20~~

$$(x-2)^2 = 20(y-7)$$

$$4p = 20$$

$$p = \frac{1}{5}$$

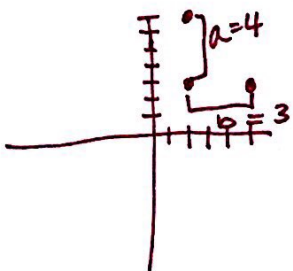
Focus: $(2, 7.2)$

Directrix: $y = 6.8$

(32) Center: $(2, 3)$

a Vertex: $(2, 7)$

b Co-vertex: $(5, 3)$



$$a = 4$$

$$b = 3$$

$$a^2 = 16$$

$$b^2 = 9$$

$$\frac{(x-2)^2}{16} + \frac{(y-3)^2}{9} = 1$$

$$(33) \quad V: (-2, 4) \quad (-2, -4)$$

$$c \quad F: (-2, 6) \quad (-2, -6)$$

$$\text{center: } \left(\frac{-2+(-2)}{2}, \frac{4+(-4)}{2} \right) = \left(-\frac{4}{2}, \frac{0}{2} \right) = (-2, 0)$$

$$a = \pm 4$$

$$c = \pm 6$$

$$16 + b^2 = 36$$

$$a^2 = 16$$

$$c^2 = 36$$

$$b^2 = 20$$

$$\boxed{\frac{y^2}{16} - \frac{(x+2)^2}{20} = 1}$$

$$(34) \quad \theta = 552^\circ$$

$$552 \cdot \frac{\pi}{180} = \boxed{\frac{46\pi}{15}}$$

$$(35) \quad \theta = 80^\circ$$

$$80 \cdot \frac{\pi}{180} = \boxed{\frac{4\pi}{9}}$$

$$(36) \quad \theta = 410^\circ$$

$$410 \cdot \frac{\pi}{180} = \boxed{\frac{41\pi}{18}}$$

$$(37) \quad \theta = -120^\circ$$

$$-120 \cdot \frac{\pi}{180} = \boxed{-\frac{2\pi}{3}}$$

$$(38) \quad \theta = \frac{95\pi}{72}$$

$$\frac{95\pi}{72} \cdot \frac{180}{\pi} = \boxed{237.5^\circ}$$

$$(39) \quad \theta = \pi$$

$$\pi \cdot \frac{180}{\pi} = \boxed{180^\circ}$$

$$\textcircled{40} \theta = \frac{4\pi}{5}$$

$$\frac{4\pi}{5} \cdot \frac{180}{\pi} = \boxed{144^\circ}$$

$$\textcircled{41} \theta = -\frac{7\pi}{12}$$

$$-\frac{7\pi}{12} \cdot \frac{180}{\pi} = \boxed{-105^\circ}$$

$$\textcircled{42} \theta = 27.582^\circ$$

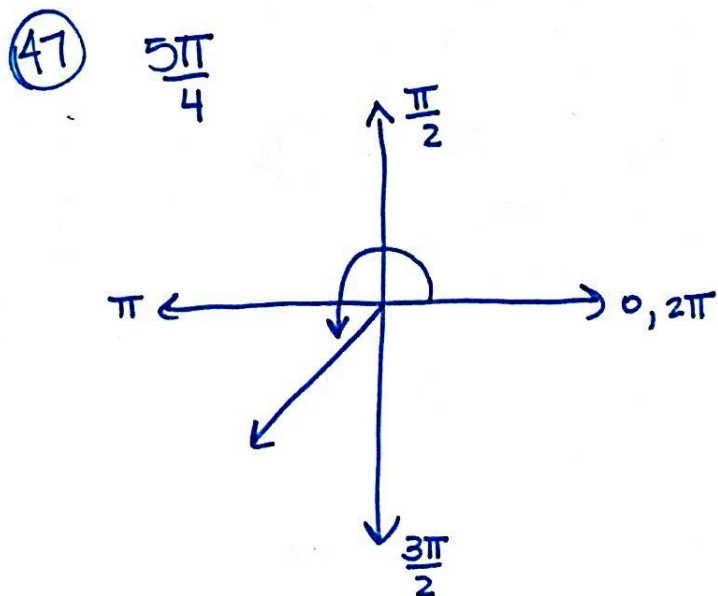
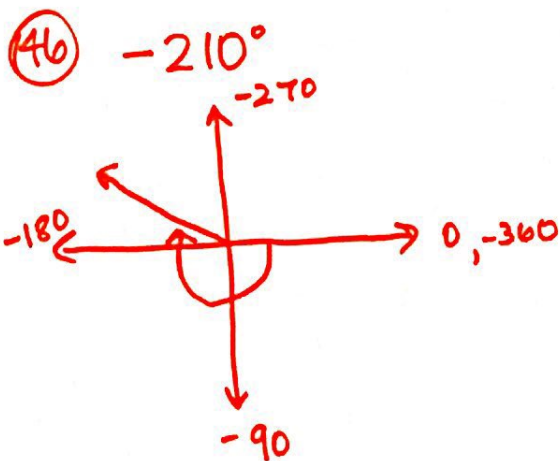
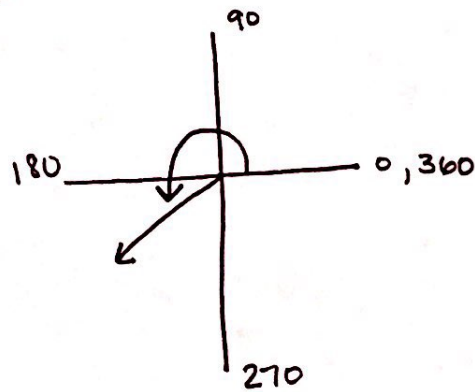
$$\boxed{27^\circ 34' 55.2''}$$

$$\textcircled{43} \theta = 28^\circ 37' 45''$$

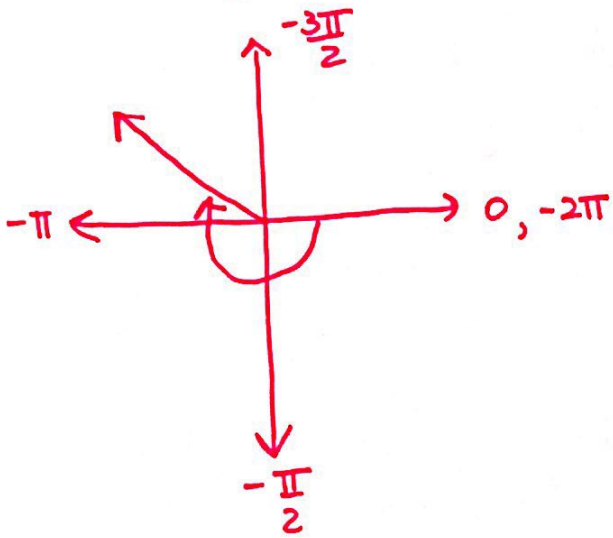
$$\boxed{28.629^\circ}$$

$$\textcircled{44} \frac{4\pi}{3} + 2\pi + 2\pi = \boxed{\frac{16\pi}{3}}$$

$$\textcircled{45} 215^\circ$$



$$(48) \quad -\frac{7\pi}{6}$$



$$(49) \quad 839^\circ$$

$$839 - 360 - 360 = \boxed{119^\circ}$$

$$(50) \quad -87^\circ$$

$$-87 + 360 = \boxed{273^\circ}$$

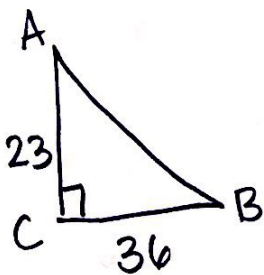
$$(51) \quad \frac{13\pi}{4}$$

$$\frac{13\pi}{4} - 2\pi = \boxed{\frac{5\pi}{4}}$$

$$(52) \quad -\frac{22\pi}{5}$$

$$-\frac{22\pi}{5} + 2\pi + 2\pi + 2\pi = \boxed{\frac{8\pi}{5}}$$

$$(53) \quad a = 36 \quad b = 23$$



$$36^2 + 23^2 = c^2$$

$$\sqrt{1825} = \sqrt{c^2}$$

$$25 \sqrt{73}$$

(53)

$$\boxed{5\sqrt{73} = c}$$

$$\tan A = \frac{36}{23}$$

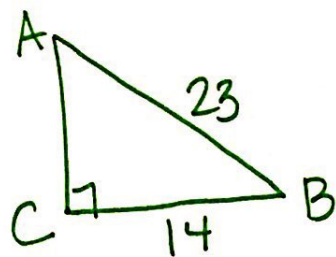
$$\tan^{-1}\left(\frac{36}{23}\right) = A$$

$$\boxed{57.43^\circ = A}$$

$$B = 90 - 57.43$$

$$\boxed{B = 32.57^\circ}$$

(54) $a = 14, c = 23$



$$14^2 + b^2 = 23^2$$

$$\sqrt{b^2} = \sqrt{333}$$

$$b = \sqrt{333}$$

↑
9 37

↑
(33)

$$b = 3\sqrt{37}$$

$$\sin A = \frac{14}{23}$$

$$\sin^{-1}\left(\frac{14}{23}\right) = A$$

$$A = 37.5^\circ$$

$$B = 90 - 37.5$$

$$B = 52.5^\circ$$

(55) $\cos 25 = \frac{x}{87}$

$$87 \cos 25 = x$$

$$78.8 = x$$

(56) $\cos x = \frac{8}{21}$

$$\cos^{-1}\left(\frac{8}{21}\right) = x$$

$$67.6^\circ = x$$

(57) $\csc(-330)$

$$\sin 330 = \frac{1}{2}$$

$$\csc = 2$$

(58) $\cot 150^\circ$

$$\tan 150^\circ = \frac{\frac{1}{2}}{-\frac{\sqrt{3}}{2}} = -\frac{1}{\sqrt{3}}$$

$$\cot 150^\circ = -\sqrt{3}$$

(59) $\sin 585^\circ$

$$585 - 360 = 225$$

$$\sin 225 = -\frac{\sqrt{2}}{2}$$

(60) $\tan 270^\circ$

$$\frac{-1}{0}$$

$$\text{undefined}$$

(61) $\cos(-300^\circ)$
 $\boxed{\frac{1}{2}}$

(62) $\sec \frac{25\pi}{6}$
 $\frac{25\pi}{6} - 2\pi - 2\pi = \frac{\pi}{6}$

$\sec \frac{\pi}{6}$
 $\cos \frac{\pi}{6} = \frac{\sqrt{3}}{2}$

$\sec \frac{\pi}{6} = \frac{2 \cdot \sqrt{3}}{\sqrt{3} \cdot \sqrt{3}} = \boxed{\frac{2\sqrt{3}}{3}}$

(63) $\sin \frac{-5\pi}{4}$
 $\boxed{\frac{\sqrt{2}}{2}}$

(64) $\cot \frac{4\pi}{3}$
 $\tan \frac{4\pi}{3} = \frac{-\frac{\sqrt{3}}{2}}{-\frac{1}{2}} = \frac{\sqrt{3}}{1}$

$\cot \frac{4\pi}{3} = \frac{1 \cdot \sqrt{3}}{\sqrt{3} \cdot \sqrt{3}} = \boxed{\frac{\sqrt{3}}{3}}$

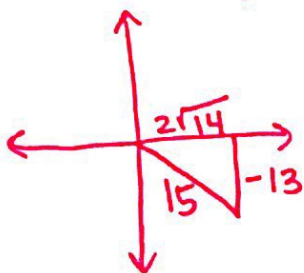
(65) $\csc \frac{5\pi}{6}$
 $\sin \frac{5\pi}{6} = \frac{1}{2}$

$\csc \frac{5\pi}{6} = \boxed{2}$

(66) $\cos \frac{5\pi}{3}$
 $\boxed{\frac{1}{2}}$

(67) $\frac{17\pi}{12}$
 $\frac{17\pi}{12} - \pi = \boxed{\frac{5\pi}{12}}$

(68) $\sin \theta = -\frac{13}{15} \frac{y}{r}$



$\tan \theta < 0$
 $(-)$

$x^2 + (-13)^2 = 15^2$
 $x^2 + 169 = 225$
 $\sqrt{x^2} = \sqrt{56}$
 $x = 2\sqrt{14}$

$\sec \theta = \frac{r}{x}$

$\sec \theta = \frac{15 \cdot \sqrt{14}}{2\sqrt{14} \cdot \sqrt{14}}$

$\boxed{\sec \theta = \frac{15\sqrt{14}}{28}}$

$$(69) \quad r=48 \quad \theta = \frac{7\pi}{15}$$

$$S = 48 \left(\frac{7\pi}{15} \right)$$

$$S = 70.38 \text{ cm} \\ \text{OR} \\ \frac{112\pi}{5}$$

$$(70) \quad r=36 \quad \theta = 130^\circ$$

$$130 \cdot \frac{\pi}{180} = \frac{13\pi}{18}$$

$$S = \frac{13\pi}{18} (36)$$

$$S = 81.68 \text{ cm} \\ \text{OR} \\ 26\pi$$

$$(71) \quad \frac{9 \text{ rot}}{5 \text{ min}} \cdot \frac{360 \text{ deg}}{1 \text{ rot}} \cdot \frac{1 \text{ min}}{60 \text{ sec}} = \frac{3240 \text{ deg}}{300 \text{ sec}} = \boxed{10.8 \text{ deg/sec}}$$

$$(72) \quad \frac{9 \text{ rot}}{5 \text{ min}} \cdot \frac{2\pi (37 \text{ ft})}{1 \text{ rot}} \cdot \frac{1 \text{ min}}{60 \text{ sec}} = \boxed{6.97 \text{ ft/sec}}$$

$$(73) \quad y = -5 \cos 7(x - 2\pi) + 1$$

a) 5

b) up 1

c) Right 2π

d) $\frac{2\pi}{7}$

$$(74) \quad y = 4 \tan 3\left(x - \frac{\pi}{2}\right)$$

a) 4

b) NONE

c) Right $\frac{\pi}{2}$

d) $\frac{\pi}{3}$

$$(75) y = 3 \sin 2(x - \pi)$$

- a) 3
- b) NONE
- c) Right π
- d) $\frac{2\pi}{2} = \pi$

$$(76) y = 4 \sec(x + \frac{\pi}{2})$$

- a) 4
- b) NONE
- c) Left $\frac{\pi}{2}$
- d) 2π

$$(77) y = \cot(x)$$

- a) 1
- b) NONE
- c) NONE
- d) π

$$(78) y = \csc 2(x - \frac{\pi}{2}) + 1$$

- a) 1
- b) Up 1
- c) Right $\frac{\pi}{2}$
- d) $\frac{2\pi}{2} = \pi$

$$(79) f(x) = 2 \sin \frac{1}{2} \theta - 1$$

Amp: 2

$$\text{Period: } \frac{2\pi}{\frac{1}{2}} = 2\pi \cdot 2 = 4\pi$$

V.S.: Down 1

$$(80) y = \tan 3(x - \frac{\pi}{6})$$

Period: $\frac{\pi}{3}$

P.S.: Right $\frac{\pi}{6}$

$$(81) \text{ Amp} = 2, \text{ Per} = \frac{\pi}{3}, \text{ P.S.} = -\pi, \text{ V.S.} = -2$$

$$\frac{\pi}{3} = \frac{2\pi}{b}$$
$$\frac{\pi}{\cancel{\pi}} b = \frac{6\pi}{\cancel{\pi}}$$
$$b = 6$$

$$y = 2 \sin 6(x + \pi) - 2$$

(82) Amp = $|-3|$, Per = π , P.S. = $\text{right} + \frac{\pi}{2}$, VS = 4

$$\frac{\pi}{1} = \frac{2\pi}{b}$$

$$\frac{\pi b}{\pi} = \frac{2\pi}{\pi}$$

$$b = 2$$

$$y = -3 \cos 2 \left(x - \frac{\pi}{2} \right) + 4$$

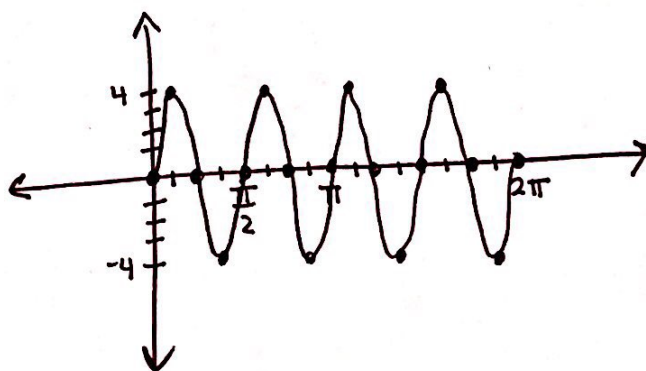
(83) $3 - -4 = \frac{7}{2} = \boxed{3.5}$

(84) $2 - -2 = \frac{4}{2} = \boxed{2}$

(85) $y = 4 \sin 4\theta$

Amp: 4

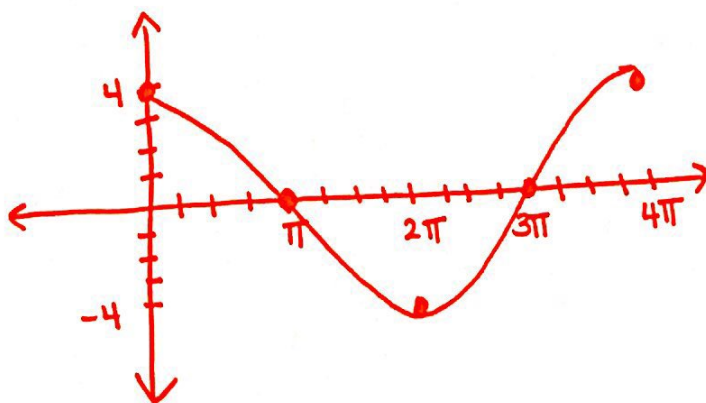
Per: $\frac{2\pi}{4} = \frac{\pi}{2}$



(86) $y = 4 \cos \frac{1}{2} \theta$

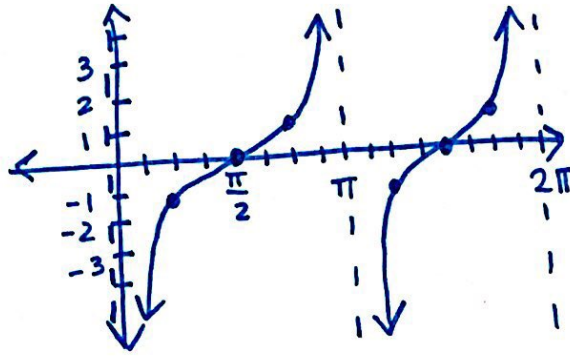
Amp: 4

Per: $\frac{2\pi}{\frac{1}{2}} = 2\pi \cdot 2 = 4\pi$



87) $y = \tan 2x$

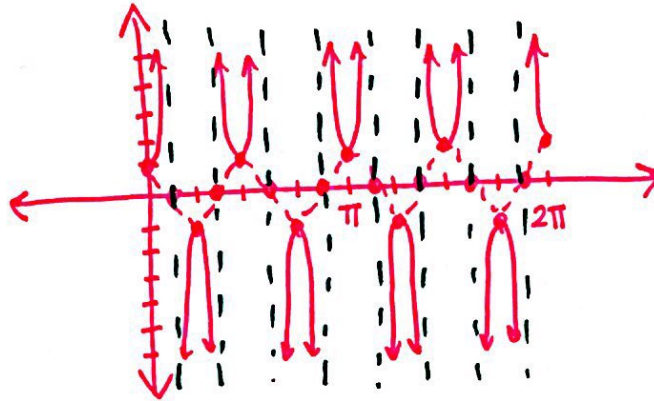
Per: $\frac{\pi}{2}$



88) $y = \sec 4(x - \pi)$

Per: $\frac{2\pi}{4} = \frac{\pi}{2}$

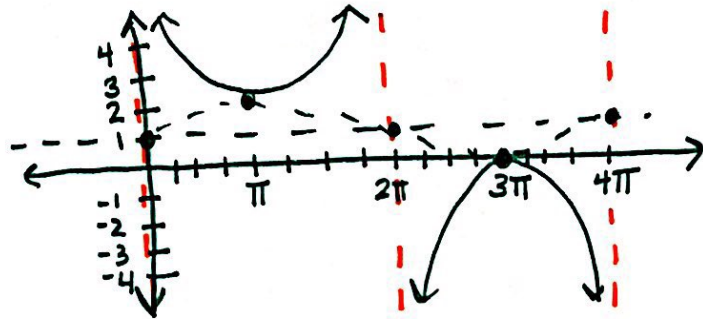
P.S.: Right π



89) $y = \csc \frac{1}{2}x + 1$

Per: $\frac{2\pi}{\frac{1}{2}} = 2\pi \cdot 2 = 4\pi$

V.S.: Up 1



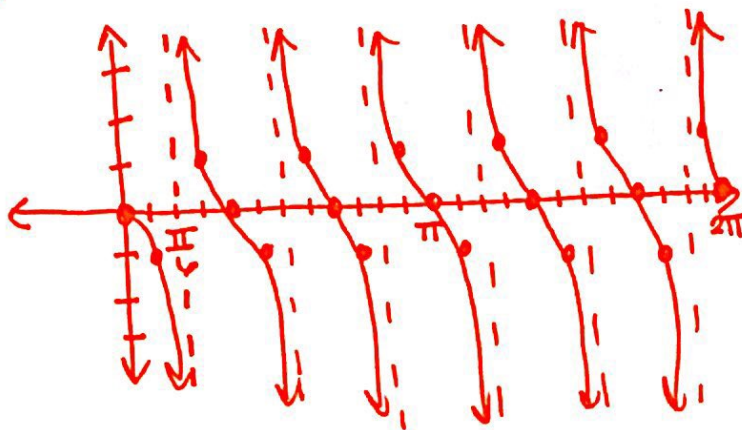
90) $y = \cot 3(x - \frac{\pi}{6})$

Per: $\frac{\pi}{3}$

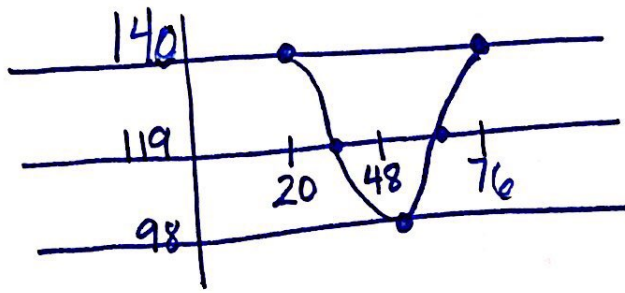
P.S.: Right $\frac{\pi}{6}$

$$\frac{\pi}{6} \cdot 2 = \frac{2\pi}{12}$$

$$\frac{\pi}{3} \cdot \frac{1}{2} = \frac{\pi}{6}$$



91



Amp: 21

Period: $76 - 20 = 56$

$$\frac{2\pi}{56} = \frac{\pi}{28}$$

Right 20

$$y = 21 \cos \frac{\pi}{28} (x - 20) + 119$$

92

$$\sin^{-1} \left(-\frac{\sqrt{3}}{2} \right)$$

$$\boxed{-\frac{\pi}{3}}$$

93

$$\arctan(1)$$

$$\boxed{\frac{\pi}{4}}$$

94

$$\cos^{-1}(\sin(-60^\circ))$$

$$\cos^{-1} \left(-\frac{\sqrt{3}}{2} \right)$$

$$\boxed{\frac{5\pi}{6}}$$

95

$$\cos^{-1} \left(\cos \frac{\pi}{2} \right)$$

$$\cos^{-1}(0)$$

$$\boxed{\frac{\pi}{2}}$$

96

$$\cos \left(\tan^{-1} \frac{\pi}{4} \right)$$

$$\cos(1)$$

$$\boxed{0\pi}$$

97

$$\tan \left(\cos^{-1}(0) + \sin^{-1} \frac{1}{2} \right)$$

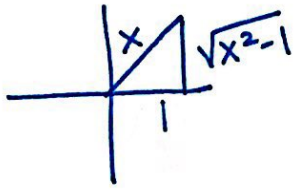
$$\tan \left(\frac{\pi}{2} + \frac{\pi}{6} \right)$$

$$\tan \left(\frac{4\pi}{6} \right)$$

$$\tan \left(\frac{2\pi}{3} \right)$$

$$\frac{\frac{\sqrt{3}}{2}}{-\frac{1}{2}} = \boxed{-\sqrt{3}}$$

$$(98) \tan(\arccos(\frac{1}{x})) \frac{x}{r}$$



$$1^2 + y^2 = x^2$$

$$1 + y^2 = x^2$$

$$\sqrt{y^2} = \sqrt{x^2 - 1}$$

$$y = \sqrt{x^2 - 1}$$

$$\tan = \frac{y}{x}$$

$$\frac{\sqrt{x^2 - 1}}{1}$$

$$\frac{\sqrt{x^2 - 1}}{\sqrt{x^2 - 1}}$$

$$(99) y = 3 \arcsin(\theta + 5) + \frac{\pi}{4}$$

- Vertical Stretch of 3

- Left + 5

- Up $\frac{\pi}{4}$

$$(100) y = -0.5 \tan^{-1}(\frac{1}{2}\theta)$$

- Reflect over x-axis

- Vertical shrink of 0.5

- Horizontal Stretch of $\frac{1}{2}$