

July 28th

a.1 ① $f(x,y) = 2x - 3y + 5$

(a) $f(2, -1) = 2(2) - 3(-1) + 5 = 12$

(b) $f(-4, 1) = 2(-4) - 3(1) + 5 = -6$

(c) $f(-2, -3) = 2(-2) - 3(-3) + 5 = 10$

(d) $f(0, 8) = 2(0) - 3(8) + 5 = -19$

③ $h(x,y) = \sqrt{x^2 + 7y^2}$

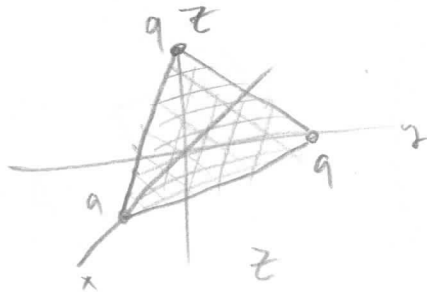
(a) $h(5, 3) = \sqrt{25 + 18} = \sqrt{43}$

(b) $h(2, 4) = \sqrt{4 + 32} = 6$

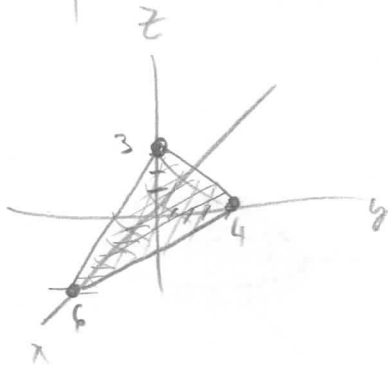
(c) $h(-1, -3) = \sqrt{1 + 18} = \sqrt{19}$

(d) $h(3, -1) = \sqrt{9 + 2} = \sqrt{11}$

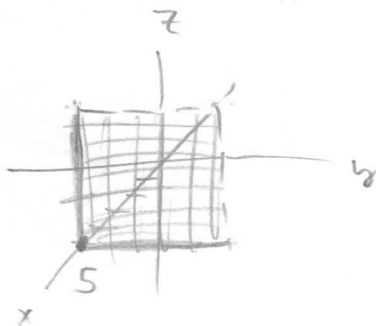
⑤ $x + y + z = 9$



⑦ $2x + 3y + 4z = 12$



⑪ $x = 5$

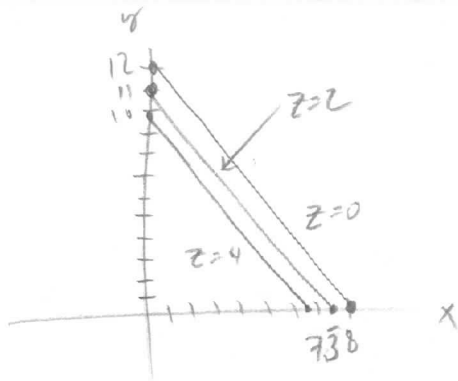


(13) $3x + 2y + z = 24$

$z=0$ $3x + 2y = 24$

$z=2$ $3x + 2y = 22$

$z=4$ $3x + 2y = 20$

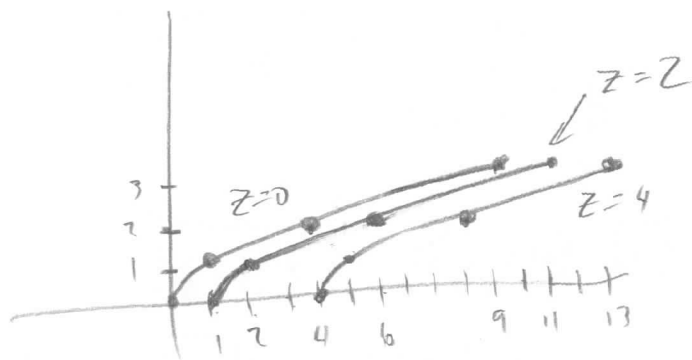


(15) $y^2 - x = -z$

$z=0$ $x = y^2$

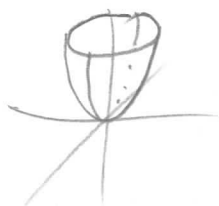
$z=2$ $x = y^2 + 2$

$z=4$ $x = y^2 + 4$



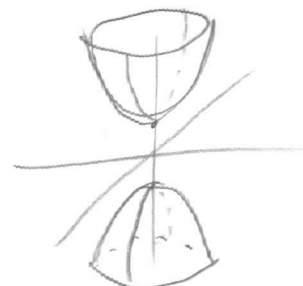
(21) $z = x^2 + y^2$

C



(22) $z^2 - y^2 - x^2 = 1$

F



(23) $x^2 - y^2 = z$

E



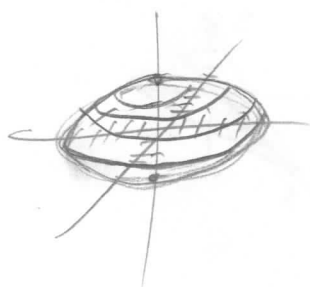
(24) $z = y^2 - x^2$

A



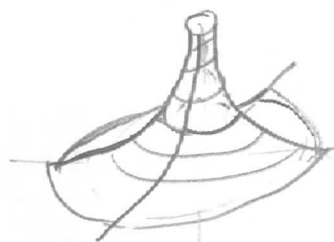
(25) $\frac{x^2}{16} + \frac{y^2}{25} + \frac{z^2}{4} = 1$

B



(26) $z = \frac{5}{\sqrt{x^2 + y^2}}$

D



$$\textcircled{27} \quad f(x, y) = 4x^2 - 2y^2$$

$$\begin{cases} \text{(a)} \\ \text{(c)} \end{cases} \left\{ \begin{aligned} \frac{f(x+h, y) - f(x, y)}{h} &= \frac{(4(x+h)^2 - 2y^2) - (4x^2 - 2y^2)}{h} \\ &= \frac{8xh + 4h^2}{h} = 8x + 4h \xrightarrow{h \rightarrow 0} 8x \end{aligned} \right.$$

$$\begin{cases} \text{(b)} \\ \text{(d)} \end{cases} \left\{ \begin{aligned} \frac{f(x, y+h) - f(x, y)}{h} &= \frac{(4x^2 - 2(y+h)^2) - (4x^2 - 2y^2)}{h} \\ &= \frac{-4yh - 2h^2}{h} = -4y - 2h \xrightarrow{h \rightarrow 0} -4y \end{aligned} \right.$$

$$\textcircled{38} \quad H(m, T, A) = \frac{15.2 m^{0.67} (T - A)}{10.23 \ln m - 10.74}$$

$$\text{(a)} \quad m = 21, T = 36, A = 4$$

$$H(21, 36, 4) = 183$$

$$\text{(b)} \quad m = 29, T = 38, A = 16$$

$$H(29, 38, 16) = 135$$