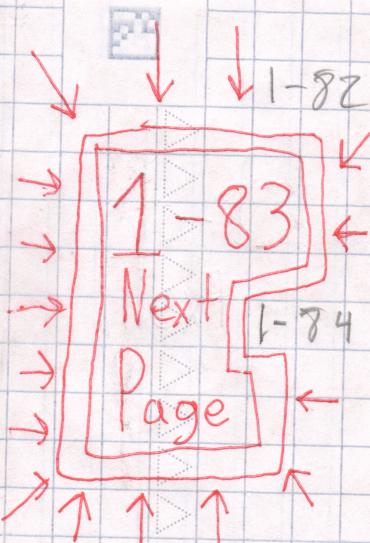


IM3 STEM Chapter 1 Review

Levy Zaraya
Period 5

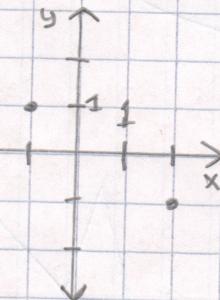


a) $\sqrt[4]{16^5} = \sqrt[4]{(2^4)^5} = 2^5 = \boxed{32}$

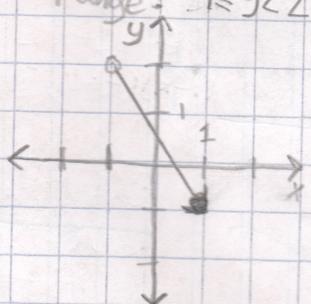
b) $\sqrt{x^5 y^4} = \boxed{x^2 y^2 \sqrt{x}}$

c) $(x^2 y^{-1}) (x^{-3} y^{-1}) = (x^2 y^{-1}) \cdot (1) = x^2 y^{-1} = \boxed{\frac{x^2}{y}}$

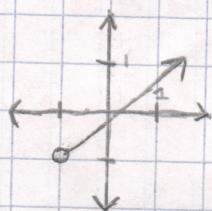
a) Domain: $x = -1, x = -2, x = 2$
Range: $y = -1, y = 0, y = 1$



b) Domain: $-1 < x \leq 1$
Range: $-1 \leq y \leq 2$

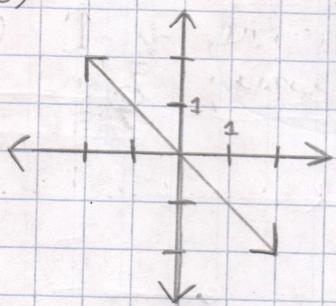


c) Domain: $x \geq -1$
Range: $y \geq -1$



d)

Domain: \mathbb{R}
Range: \mathbb{R}



1-87

a) $w^2 + 4w = 0$

$$w(w+4) = 0$$

$$w=0, w=-4$$

b) $5w^2 - 2w = 0$

$$w(5w-2) = 0$$

$$w=0, w=\frac{2}{5}$$

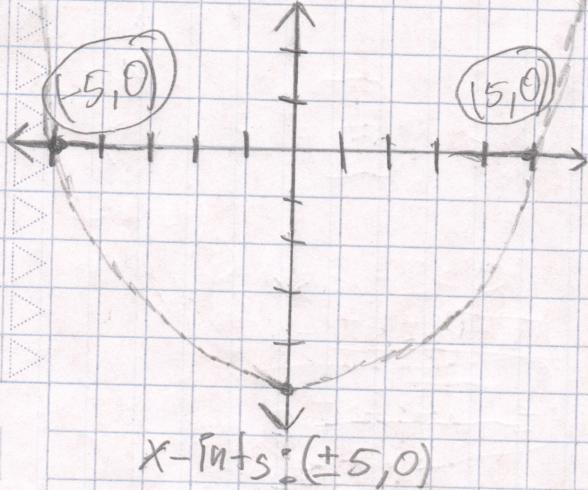
c) $w^2 = 6w$

$$w^2 - 6w = 0$$

$$w(w-6) = 0$$

$$w=0, w=6$$

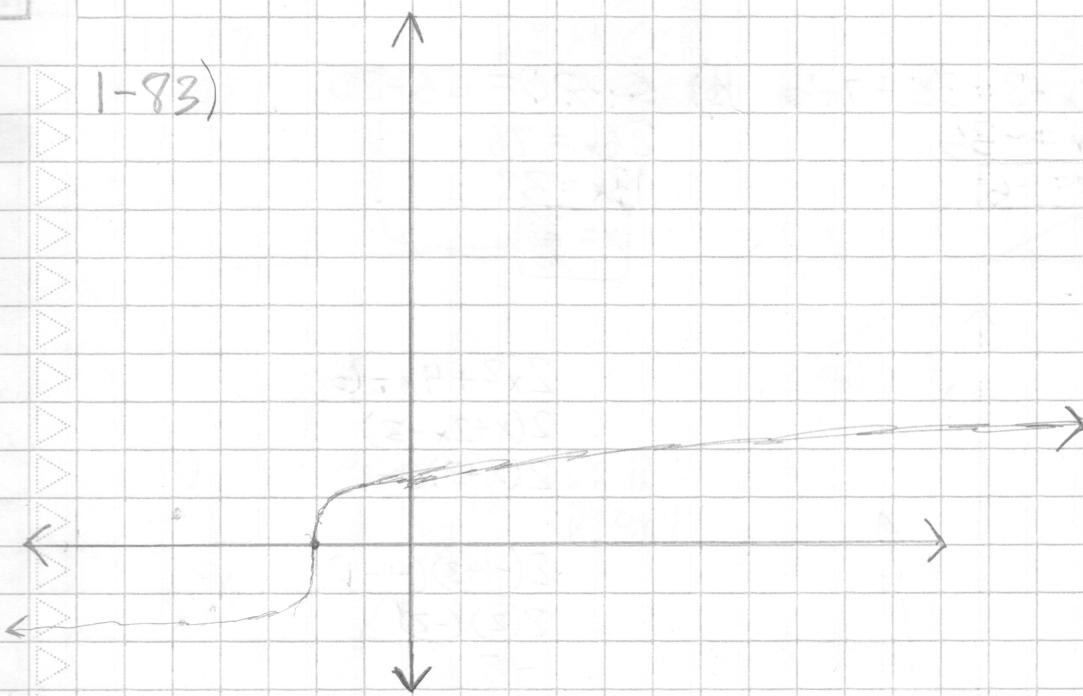
1-88



1-89

the equation of the x-axis would be $y=0$. The equation of the y-axes would be $x=0$

1-83)



1-91)

a) $(x-1)(x+1) = \boxed{x^2 - 1}$, Diff of Squares

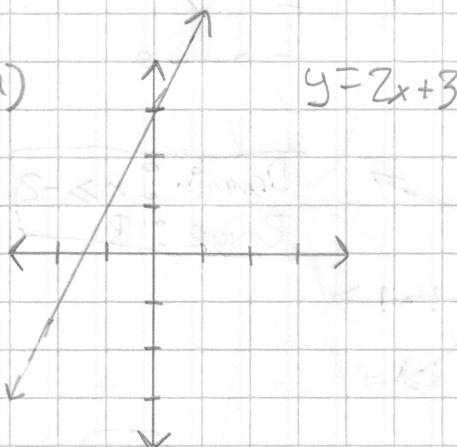
b) $2x(x+1)^2 = 2x(x^2 + 2x + 1) = \boxed{2x^3 + 4x^2 + 2x}$

c) $(x-1)(x+1)(x-2) = (x^2 - 1)(x-2) = \boxed{x^3 - 2x^2 - x + 2}$

d) x-intercept: $(\pm 1, 0), (2, 0)$, $(-1)(1)(-2) = 2$, y-intercept: $(0, 2)$

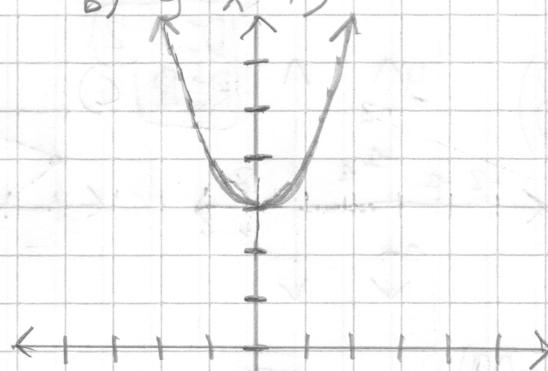
1-92)

a)



$$y = 2x + 3$$

b) $y = x^2 + 3$



c) For a) x-intercept: $(-1.5, 0)$
y-intercept: $(0, 3)$

For b) x-intercept: None
y-intercept: $(0, 3)$

d) $\begin{cases} y = x^2 + 3 \\ y = 2x + 3 \end{cases}$

$$x^2 + 3 = 2x + 3$$

$$x^2 = 2x$$

$$x^2 - 2x = 0$$

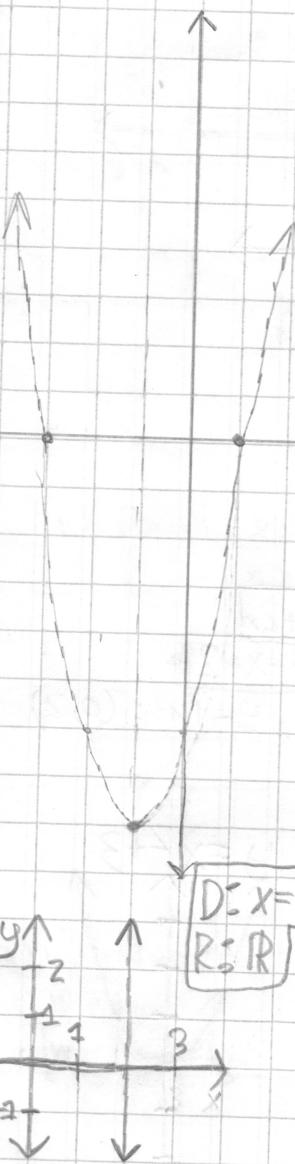
$$x(x-2) = 0$$

$$\boxed{x=0, x=2}$$

1-95

$$\begin{aligned} \text{a) } -2x - 8 &= 35 - 7 + 4x & \text{b) } 5x - 20 &= 56 - 21x \\ 6x &= -36 & 26x &= 76 \\ x &= -6 & 13x &= 38 \\ && x &= \frac{38}{13} \end{aligned}$$

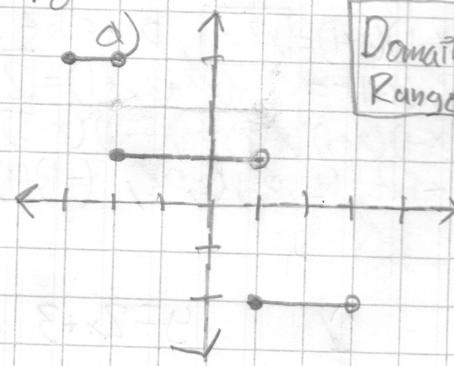
1-97



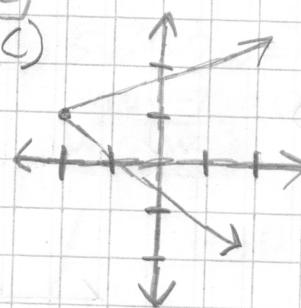
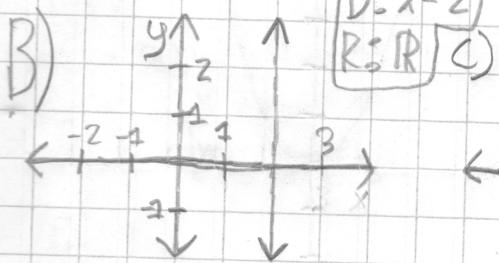
$$\begin{aligned} 2x^2 + 4x - 6 &= 0 \\ 2(x+2x-3) &= 0 \\ 2(x+3)(x-1) &= 0 \end{aligned}$$

$$\begin{aligned} 2(-1+3)(-1-1) &= 0 \\ 2(2)(-2) &= -8 \end{aligned}$$

1-98



$$\begin{aligned} \text{Domain: } &-3 \leq x \leq 3 \\ \text{Range: } &y = -2, y = 1, y = 3 \end{aligned}$$



1-99

$$\begin{aligned} \text{a) } 5^{-2} &= \frac{1}{5^2}, \quad \text{b) } xy^{-2} = \frac{x}{y^2}, \quad \text{c) } (xy)^{-2} = \frac{1}{(xy)^2}, \quad \text{d) } a^3 b^4 a^{-4} b^6 \\ &= a^{-1} b^{10} = \frac{b^{10}}{a} \end{aligned}$$

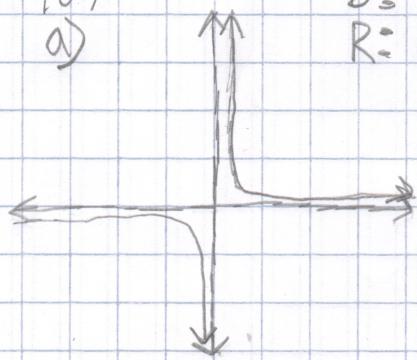
1-104)

$$\begin{aligned} \text{a) } x^2 + 3x - 3 &= 0 \\ x_{1,2} &= \frac{-3 \pm \sqrt{9+12}}{2} \\ &= \frac{-3 \pm \sqrt{21}}{2} \\ x &\approx 0.71 \\ x &\approx -3.71 \end{aligned}$$

$$\begin{aligned} \text{b) } 3x^2 - 7x &= 12 \\ 3x^2 - 7x - 12 &= 0 \\ x_{1,2} &= \frac{7 \pm \sqrt{49+144}}{6} \\ x &\approx -1.15 \\ x &\approx 3.48 \end{aligned}$$

1-107

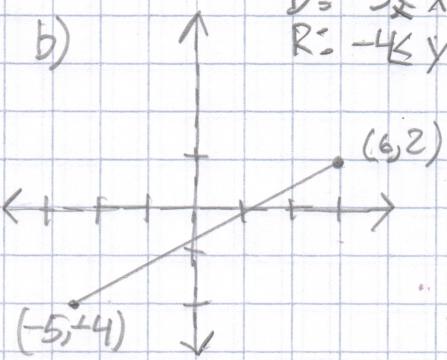
a)



$$D: x \neq 0; \mathbb{R}$$

$$R: \mathbb{R}; y \neq 0$$

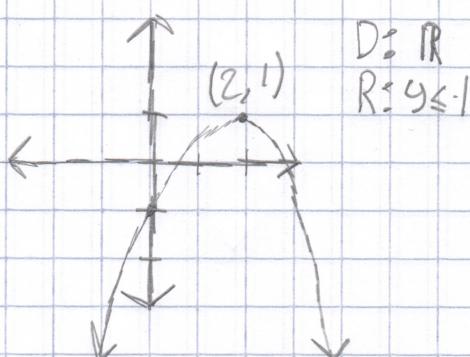
b)



$$D: -5 \leq x \leq 6$$

$$R: -4 \leq y \leq 2$$

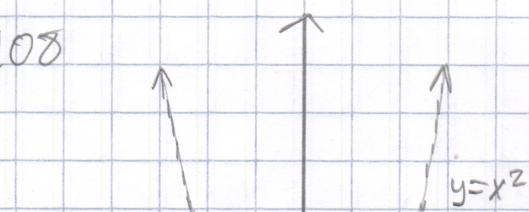
c)



$$D: \mathbb{R}$$

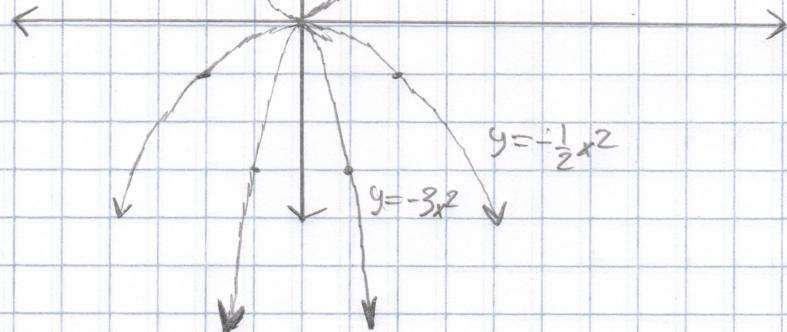
$$R: y \leq 1$$

1-108



$$y = x^2$$

It makes it ~~look~~ face down



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

$$y = -3x^2$$