(B)

① $f(x)=\sqrt{15-x}$

$15-x\geq 0$

$15\geq x$

Domain: $\{x \mid x\leq 15\}$ Sol is $\underline{c}$

② $Y=0.90-3.79$ Sol is $\underline{c}$

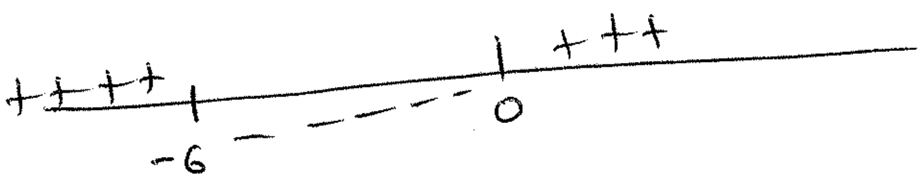
③ $f(4)=(4)^2+5(4)+1$

$=16+20+1=37$ Sol is $\underline{c}$

④ $x^2+6x\geq 0$

$x(x+6)\geq 0,$

Zeros at $x=0$ and $x=-6$



Test Point $\underline{-7}$

$(-7)(-7+6)=(-7)(-1)=7>0$

Test Point $\underline{-1}$

$(-1)(-1+6)=(-1)(5)=-5<0$

Test Point $\underline{1}$

$(1)(1+6)=1(7)=7>0$

$\{x \mid x\leq -6 \text{ or } x\geq 0\}$

Sol is $\underline{B}$

or

$f(x) = x^2 + 6x$

$= (x^2 + 6x + 9) - 9$

a) 6

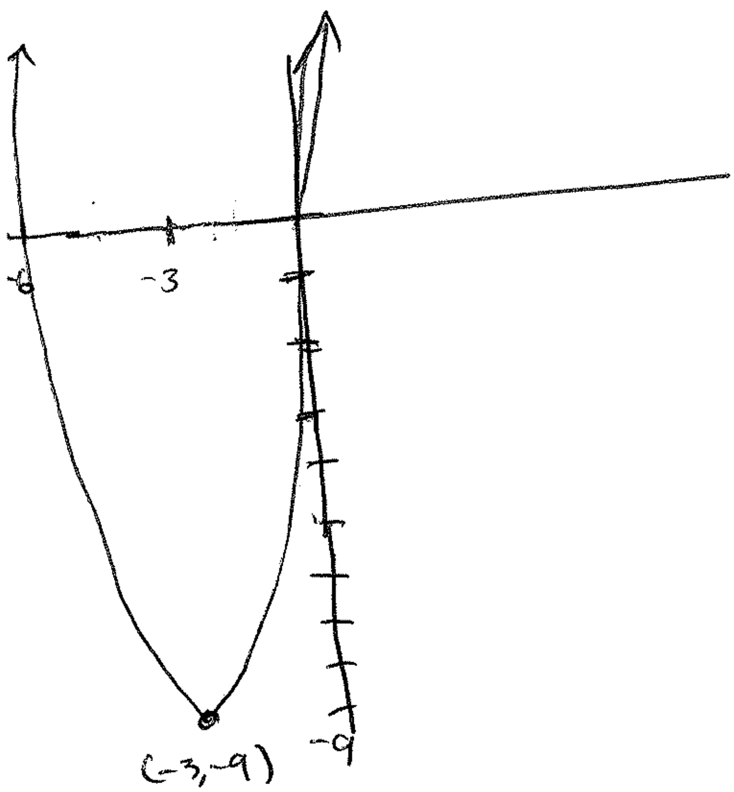
$= (x+3)^2 - 9$

b) $\frac{6}{2} = 3$

c) $(3)^2 = 9$

Vertex $(-3, -9)$

x-intercept $(0, 0), (-6, 0)$



Graph is above x-axis

$[-\infty, -6]$ or $[0, \infty)$.

Sol is B

(5) $f(x) = -4x^3$

$f(-x) = -4(-x)^3 = -4(-(x)^3)$

$= -(-4x^3)$

$= -(f(x))$

Odd

Sol is B

6) $f(x) = \sqrt{2x}$ from 2 to 8

$$AVRC = \frac{f(b) - f(a)}{b - a}, \quad a = 2, \; b = 8$$

$$AVRC = \frac{f(8) - f(2)}{8 - 2} = \frac{\sqrt{2(8)} - \sqrt{2(2)}}{6} = \frac{4 - 2}{6} = \frac{2}{6} = \frac{1}{3}.$$

Sol is $\underline{C}$

(7)

$f(-25) = 15$

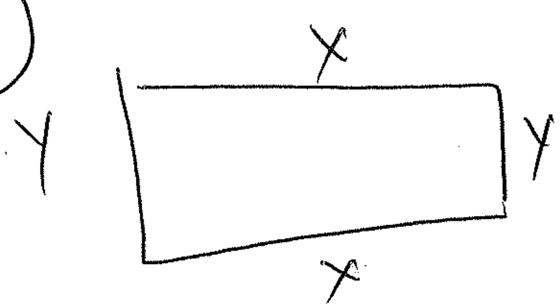
Sol is $\underline{A}$

(8) $f(x) = 2x + 5$; $g(x) = 4x - 3$

$$\left(\frac{f}{g}\right) = \frac{2x+5}{4x-3}, \quad x \neq \frac{3}{4}$$

Sol is $\underline{D}$

(9)



Perimeter $= 124$

$2X + 2Y = 124 \; \dots \; (1)$

then from (1) $2x + 2y = 124$

$2y = 124 - 2x$

$Y = \frac{124 - 2x}{2} = 62 - X$

Area $= XY$,

$= X(62 - X)$.

$= 62x - x^2 \quad = -x^2 + 62x$

is a Parabola opens downwards. it has a max

at the Vertex $= \left(\frac{-b}{2a}, f\left(\frac{-b}{2a}\right) \right)$

$= \left(\frac{-62}{2(-1)}, f\left(\frac{-62}{2(-1)}\right) \right)$

$= \left(\frac{-62}{-2}, f\left(\frac{-62}{-2}\right) \right)$

$= (31, f(31))$

So $x = 31$ and $y = 62 - 31 = 31$

Sol is $\underline{A}$

(10) $C(x) = 32x + 560$

$C(51) = 32(51) + 560$

$= 2192$

Sol is (A).

(11)

Sol is (A)

(12)

$f(x) = -x^2 - 4x - 3$

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

a) 4 $\quad = -(x^2+4x+4) - 3 + 4$ $\qquad$ Standard form $f(x) = a(x-h)^2 + k$

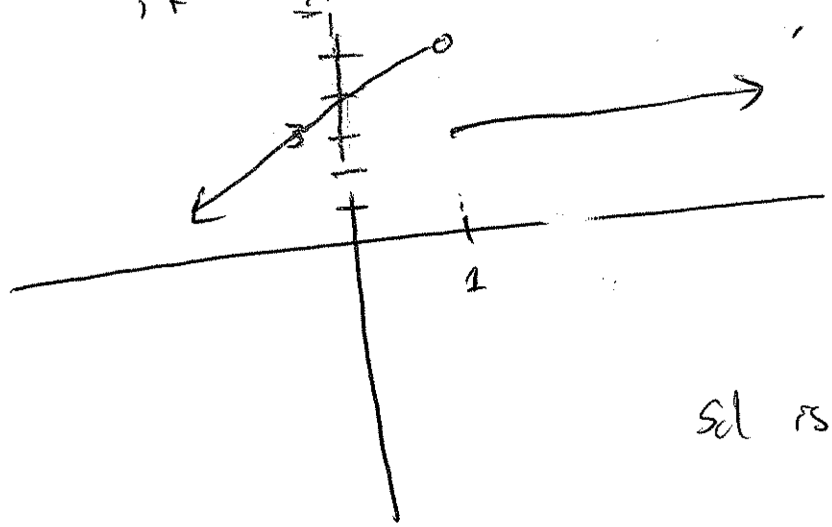
b) $\frac{4}{2} = 2$

c) $(2)^2 = 4$ $\quad = -(x+2)^2 + 1$

Vertex $(-2, 1)$

Intercepts $(-1, 0)$, $(-3, 0)$, $(0, -3)$

(13) $f(x) = \begin{cases} x+4 & \text{is } x<1 \\ 3 & \text{if } x \geq 1 \end{cases}$



Sol is $\underline{D}$

(14) $f(x) = 8x + 8$

$$\frac{f(x+h) - f(x)}{h} = \frac{(8(x+h)+8) - (8x+8)}{h} = \frac{8\cancel{x}+8h\cancel{+8}\cancel{-8x}\cancel{-8}}{h}$$

$$= \frac{8h}{h} = \underline{8}$$

Sol is $\underline{C}$