https://www.desmos.com/calculator

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

1) $f(0) = 0^2 + 2(0) + 6 = 6$

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

3) $f(x+h) = (x+h)^2 + 2(x+h) + 6$
$$x^2 + 2xh + h^2 + 2x + 2h + 6$$

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

$$\frac{f(x+h) - f(x)}{h} = \frac{2xh + h^2 + 2h}{h} = \frac{\cancel{h}(2x+h+2)}{\cancel{h}}$$

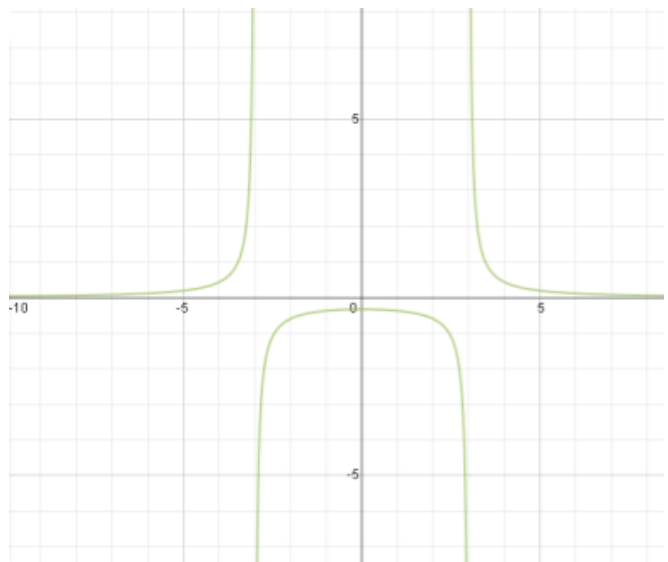$$2x + h + 2 \quad (h \neq 0)$$

4) $f(x) = \dfrac{3}{x^2-9}$

D: $\{x : x \neq \pm 3\}$
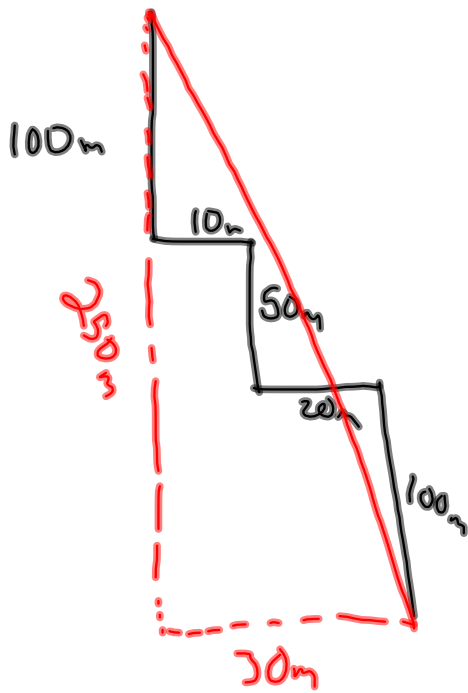
R: $\{x : y > 0, \text{ and } y < -\frac{1}{3}\}$

$x^2-9 \neq 0$

$x^2 \neq 9$

$x \neq \pm 3$

5)

100m

250 m

10m

50m

20m

100m

30m

distance 280m

displacement

$$\sqrt{250^2 + 30^2} = 251.8\,m$$