1 10.a

$$\frac{x^2+x-6}{x-2} = x+3$$

This equation is false if x = 2
Singularity may happened in type

$$\frac{c}{0} \quad ; c \in \mathbb{R}$$

2 10.b

$$\lim_{x\to 2} \frac{x^2+x-6}{x-2} = \lim_{x\to 2} x+3$$

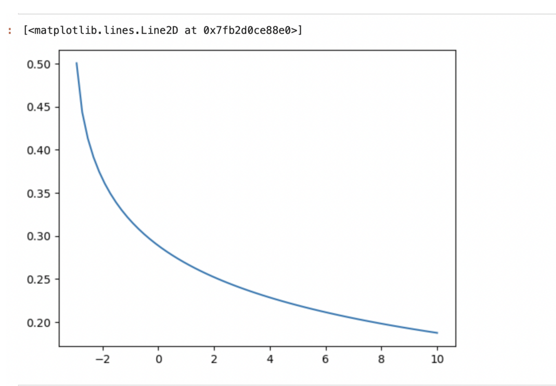
Is corrected because when x is approcing to 2 means it's not equals 2 so it's not make any singularity

$$\lim_{x\to 2} \frac{(x+3)\cancel{(x-2)}}{\cancel{(x-2)}} = \lim_{x\to 2}(x+3)$$

$$\lim_{x\to 2}(x+3) = \lim_{x\to 2} x+3$$

$$5 = 5$$

3 36.a



$$\lim_{x\to 0} f(x) = 0$$

4 36.b

```
def f(x):
    y = (sq(3 + x) - sq(3))/ x
    return y

for element in [0.1, 0.01, 0.001, 0.0001]:
    e = element
    a, b = f(-e), f(e)
    a, b = round(a, 4), round(b, 4)
    print(f"e : {e} \t f(-e) = {a}, f(e) = {b}")
```

```
e : 0.1         f(-e) = 0.2911, f(e) = 0.2863
e : 0.01        f(-e) = 0.2889, f(e) = 0.2884
e : 0.001       f(-e) = 0.2887, f(e) = 0.2887
e : 0.0001      f(-e) = 0.2887, f(e) = 0.2887
```

```
]:
```

from table we can see the pattern that if e is approch to 0then limit value is almost the same at 0.2887

5 36.c

consider f(x)

$$
\begin{aligned}
&= \frac{(\sqrt{3+x}-\sqrt{3})(\sqrt{3+x}+\sqrt{3})}{(x)(\sqrt{3+x}+\sqrt{3})} \\
&= \frac{(3+x)-3}{(x)(\sqrt{3+x}+\sqrt{3})} \\
&= \frac{x}{(x)(\sqrt{3+x}+\sqrt{3})} \\
&= \frac{1}{(\sqrt{3+x}+\sqrt{3})} \quad (1)
\end{aligned}
$$

$$
\begin{aligned}
\lim_{x\to 0} f(x) &= \frac{1}{(\sqrt{3+0}+\sqrt{3})} \\
&= \frac{1}{(\sqrt{3}+\sqrt{3})} \\
&= \frac{1}{2\sqrt{3}} \\
&\approx 0.2887
\end{aligned} \tag{2}
$$