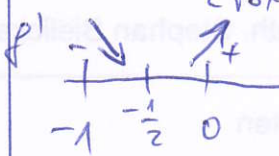


1.1 $D = 3^2 - 4 \cdot 3 \cdot 1 < 0, f(0) = 1 \Rightarrow D = \mathbb{R}$ ✓ 2

1.2 $f(0) = 1$ $S(0|1)$ ✓ 1

1.3 $f'(x) = \frac{1}{2\sqrt{3x^2+3x+1}} (6x+3) \stackrel{!}{=} 0 \Rightarrow x = -\frac{1}{2}$ ✓
 f'  $T(-\frac{1}{2} | \frac{1}{2})$ ✓ 4

1.4 $f'(-1) = -\frac{3}{2}$ ✓ $f(-1) = 1$ ✓ $y = -\frac{3}{2}(x+1)+1$
 $y = -\frac{3}{2}x - \frac{1}{2}$ ✓ 3

1.5 $f'(x) = \frac{3}{2} \frac{6x+3}{2\sqrt{3x^2+3x+1}} = \frac{3}{2}$ ✓ $(2x+1)^2 = 3x^2+3x+1$ ✓
 $4x^2+4x+1 = 3x^2+3x+1$
 $x^2+x=0 \Leftrightarrow x_1=0, x_2=-1$ ✓
 $f'(-1) = -\frac{3}{2} \downarrow \Rightarrow x_0=0$ $f(0)=1$ ✓
 $y = \frac{3}{2}(x-0)+1 = \frac{3}{2}x+1 \Rightarrow b=1$ ✓ $B(0|1)$ ✓ 5

2.1 $6x+8 > 0$ ✓ $x > -\frac{8}{6} = -\frac{4}{3}$ $D =]-\frac{4}{3}, +\infty[$ ✓ 3

2.2 $\frac{x^2+1}{6x+8} = 1$ ✓ $x^2+1 = 6x+8$ $x^2-6x-7=0$ ✓
 $x_1 = -1$ $x_2 = 7$ ✓ 3

2.3 $\lim_{x \rightarrow +\infty} \ln \frac{x^2+1}{6x+8} = +\infty$ ✓ $\lim_{x \rightarrow -\frac{4}{3}} \ln \frac{x^2+1}{6x+8} = +\infty$ ✓ 2

2.4 $x_0 = -1 : f(-1) = 0$ $f'(x) = \frac{2x}{x^2+1} - \frac{6}{6x+8}$ ✓ $f'(-1) = -4$
 $I y = -4(x+1) = -4x-4$ ✓
 $x_0 = 7 : f(7) = 0$ $f'(7) = \frac{4}{25}$
 $y = \frac{4}{25}(x-7) = \frac{4}{25}x - \frac{28}{25}$ ✓
 $-4x-4 = \frac{4}{25}x - \frac{28}{25}$ ✓ $-\frac{104}{25}x = \frac{72}{25}$ ✓
 $x = -\frac{9}{13}$ ✓ $y = -4(-\frac{9}{13}) - 4 = -\frac{16}{13}$ $S(-\frac{9}{13} | -\frac{16}{13})$ ✓ 6

