Exercise 1: (1 pto) Work out using the properties of logarithms and indicating all the steps $\log_3 \dfrac{\sqrt{3} \cdot \sqrt[3]{9}}{\sqrt[4]{27}} =$

Exercise 2: (1.25 ptos) Work out:

a) $\lim\limits_{x \to 1} \dfrac{x^2 + 4x - 5}{x^2 - 1} =$ (0.5)

b) $\lim\limits_{x \to \infty} \left(3x - \dfrac{3x^2 - 4x + 7}{x - 1} \right) =$ (0.75)

Exercise 3: (0.75 ptos) Find the asymptotes of the function $f(x) = \dfrac{5x^2 - 4x + 3}{x^2 - 1}$

Exercise 4: (2 ptos) Find the domain of the following functions:

a) $f(x) = \dfrac{x^2 - 4}{\sqrt{x^2 - 5x + 4}}$ (0.75)

b) $f(x) = \dfrac{\sqrt{x + 5}}{x^2 - 4}$ (0.75)

c) $f(x) = \dfrac{2x - 1}{2x - 5}$ (0.5)

Exercise 5: (1 pto) Find the **general** equation of the line going through the points $A(2, -3)$ and $B(5, 1)$

Exercise 6: (1 pto) If $\cos \alpha = 0.72$ find the values of $\sin \alpha$, $\tan \alpha$ and the angle α using degrees, minutes and seconds. Round the answers to four decimal figures if needed

Exercise 7: (1.25 ptos) Find the three principal trigonometric functions of the angle α with four decimal figures, and the value of the missing side. You can't use Pythagoras' theorem.
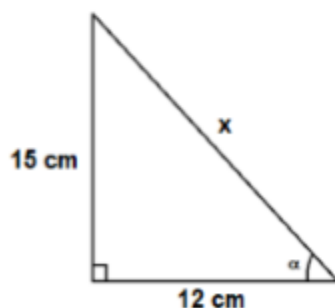
Exercise 8: (1.75 ptos) Sketch the graph of the piecewise function:

$$f(x) = \begin{cases} 3 & x < -1 \\ 2^x & -1 \leq x < 3 \\ x^2 - 12x + 35 & 3 \leq x < 8 \end{cases}$$